# THE HINDUSTANI BINET-PERFORMANCE POINT SCALE

# THE HINDUSTANI BINET-PERFORMANCE POINT SCALE

*With*
*Complete Instructions for the Administration and Scoring of Tests*

BY
C. HERBERT RICE, M.A., PH.D.,
*Forman Christian College, Lahore*

PRINCETON
PRINCETON UNIVERSITY PRESS
LONDON: HUMPHREY MILFORD
OXFORD UNIVERSITY PRESS
1929

Printed at
The Wesleyan Mission Press
Mysore City

# TABLE OF CONTENTS


| | Page |
|---|---|
| FOREWORD .. ... .. .. | ix |
| (1) Introduction : General Description of the Experiment .. | 1 |
| (2) Preface : Precautions Necessary to keep Tests Confidential .. | 2 |
| (3) Sources, Materials, and General Instructions .. .. | 3 |
| (4) The Fixed Order of Testing .. .. .. .. | 6 |
| (5) Sample Scoring Sheet .. .. .. .. | 8 |
| (6) Text of the Tests, with Procedure, Notes, and Directions for Scoring .. . . .. .. | 15 |
| (7) Seven Additional Tests .. .. .. .. | 55 |
| (8) Panjabi Equivalents .. . .. .. | 59 |
| (9) Point Scale Norms and Mental Ages .. .. .. | 72 |
| (10) Brief Scale Norms .. .. .. .. | 74 |
| (11) Rules for the Brief Scale, and for Omission of Tests .. | 74 |
| (12) The Non-Verbal Short Scale .. .. . .. | 76 |
| (13) List of Materials Required .. . . .. | 77 |
| (14) Pictures for Use with the Scale .. .. .. | 80 |

# FOREWORD

The writer takes this opportunity to express his great obligation to the members of the Department of Psychology of Princeton University, for their valuable suggestions in conference when this scale was being projected, and later in correspondence; to Prof. H. C. Warren, for his personal interest and encouragement, both in the U.S.A. and during his visit to India; and in very special measure to Dr. C. C. Brigham, for his guidance at Princeton, and by means of lengthy correspondence during the extended period of the experiment in India. Without his help it would have been impossible to carry the investigation through to its present stage.

Others who have placed the writer under obligation are Mr. Muhammad Akbar Khan, B.A., LL.B., Mr. Sundar Das, M.A., Mr. Durga Das Chopra, B.A., LL.B., Mr. Mohan Lal Bahl, Mr. J. Beatty, B.A., and Mr. Robert Justin, M.A., all of whom made themselves expert in the administering of the tests, and took great pains in helping to bring the experiment to a conclusion. Thanks are also due to M. Wazir Ali, former Drawing Master, Central Training College, Lahore, Mrs. F. Mowbray Velte and Mrs. C. Herbert Rice, for their kind collaboration in producing the pictures used with the Hindustani scale. Grateful mention must also be made of the continuous interest and assistance of Mr. H. Wyatt, I.E.S., formerly Principal of the Government Central Training College, Lahore, and now a professor in the University of Oregon.

Acknowledgement must be made of the very kind

and generous co-operation of all the headmasters and teachers whose schools were visited.

# A HINDUSTANI BINET-PERFORMANCE POINT SCALE

## PART I

### (A) GENERAL DESCRIPTION OF THE EXPERIMENT

#### § (1) Introduction

The first stage in the development of the scale here presented was the translation into Urdu, in 1922, of the Stanford-Binet scale, and of parts of the Otis group tests, and the U.S. Army Alpha. The directions for administering certain non-verbal tests in the Army Beta, Pintner-Paterson Performance scale, and Porteus Maze scale were also, translated, with or without various modifications and adaptations. The original translation was carried out, under the direction of the writer, by two Indian students of the Forman Christian College, candidates for the B.A., and was subjected to frequent revision by one of the Indian professors of the same college, and by two Indian professors of the Central Training College, Lahore. At a later stage the language of the tests finally chosen was perfected in many conferences between the writer and the four Indian assistant examiners.

These tests were tried out upon a variety of subjects in the Central Training College and Central Model School, Lahore, and in the Government Reformatory School, Delhi. It soon became evident that many of

the tests were, at least for our present purpose, unsuitable for use in the Panjab. A list of well-known tests eliminated at this stage in the Panjab experiment appears in Part II, § 18. Many considerations led to the rejection of these tests—such as the limits of time, the need for variety, and the securing of material equally familiar to boys of various home and school environments. Thirty-five tests were finally selected, and, after extensive standardization, are here presented in approximate order of difficulty as a Point Scale.

In the remaining pages of Part I will be found the scale as published for use by examiners in India, with complete manual of instructions, tables of norms, and list of materials. In Part II there follows a full account of the examination of 929 Panjabi schoolboys by means of this scale, and of the test results secured. The fixing of age-norms and the validation of the scale are also discussed. In Part III is presented a comparative study of boys of Chuhra parentage (boys from the "depressed classes") with other major caste groups of the province.

## (B) THE SCALE AS PUBLISHED, WITH MANUAL OF INSTRUCTIONS

### § (2) Preface

This Hindustani scale is not intended for general sale, but may be supplied to responsible persons who desire to use it in mental examinations or to secure further data with a view to verifying or improving it. This restriction seems necessary in view of the almost universal practice of trying to find out in advance what kind of questions are likely to be asked in any examina-

tion. Masters themselves are only too ready to "listen in," and may try to help their own boys to excel in the tests. It is obvious that if any such body of tests should become generally known in a particular school, the results in that school would be vitiated, and any other data to which they might be added would be consequently invalidated. It is not believed that in ordinary conversation between boys who have taken the tests and those who have not any considerable amount of information is conveyed.

### § (3) Sources, Materials and General Instructions

THE TESTS. The tests used are adaptations of standard tests from the Binet-Simon scale, or its more recent revisions and extensions, with some additional non-verbal tests described in Pintner and Paterson's *Scale of Performance Tests.*[1]

BOOKS REQUIRED. The discussion of these tests in the following pages is so meagre that it will be essential for anyone who undertakes to use them to have at hand at least one of the standard works on the subject, viz., Terman's *The Measurement of Intelligence.*[2]

Another volume of great importance which would be of immense value to any person who undertakes to use this scale is Burt's *Mental and Scholastic Tests.*[3]

Several of the tests require also the use of part of the *Test Material,*[4] published as a supplement to Terman's *Measurement of Intelligence.* It is well to have

[1] Appletons, 1917; price, 10*s.* 6*d.*

[2] Houghton, Mifflin & Co., 1916; price, 7*s* 6*d.*

[3] London County Council (P. S. King & Sons, Ltd.,); price, 21*s.*

[4] Price, 3*s.* 6*d.* The three books above mentioned, and the test material for the Stanford-Binet scale are procurable from England through any bookseller, and may be expected within five or six weeks.

all this test material in hand in order to understand the discussions in the text. For actual use with the Hindustani scale only the six scoring cards are essential.

MATERIALS REQUIRED. The five Hindustani pictures used are available from the writer, and orders for standard form-boards, weights, etc., will be placed with the Forman College cabinet-maker at reasonable rates. These latter can also, with due precautions, be made up from specifications contained in Pintner and Paterson's *Scale of Performance Tests*.[1] Printed sheets for complete record are also available from the writer. For complete list of materials required cf. § 12.

THE LANGUAGE OF THE TESTS. The tests have been prepared in two versions, Urdu and Panjabi. The Panjabi form is equivalent, phrase by phrase, to the Urdu form. There has been no attempt to secure elegance, or to please those who would relish high-sounding and luscious phrases. It has been our constant endeavour, after extended experiment, to hit upon the simplest and most effective Urdu for the purpose.

The Panjabi is the result of our attempt to render this Urdu, phrase by phrase, into something absolutely equivalent and just as instantly intelligible to a small child in a Panjab village as the Urdu might be supposed to be to an older child in Delhi or Lahore.

ESSENTIAL RULES TO BE OBSERVED. We urgently request every person who uses this scale to observe the following rules:

(*a*) To use the exact phraseology and procedure here laid down.

[1] In the specifications for the Goddard Form-board one most essential point is omitted, viz., the amount of play between the block and its recess. In making up these boards it is essential that in this respect also the apparatus already in use be exactly copied. (Cf. Special Note on the Goddard Form-board, § 20.)

(*b*) In case of sending in any data for evaluation, or for our further records, to state specifically which version has been used; or, in case of using the Urdu and Panjabi as alternative, to specify in which individual tests the Panjabi has been used.

(*c*) In case of any difference of opinion as to the suitability of a particular phrase, to discuss the point with us before introducing any variation.

(*d*) In case of any criticism of our procedure concerning a point which you can possibly regard as *not essential* but merely a matter of taste or preference, to remember that our version has the advantage of having already been used and standardised on a thousand cases.

SUPPLEMENTARY INFORMATION REQUIRED. A word must be added about the supplementary information called for in the examination forms. Every item here is important. *Only four* of these items are to be ascertained by questioning the boy himself, viz., Name, Father's Name, Father's Occupation, and Place of Residence. All other items *must* be verified from authentic records in the school. The Date of Birth is most important. This must be filled in, month and year, from the admission register. We know that even this record may be at fault, but, remembering that the boy himself almost never knows his exact age, and that even the parent is seldom sure without referring to some record, it is the only safe and constant procedure to ascertain age invariably from the admission register.

*Age* should always be computed subsequently from the dates of birth copied from the register; and preferably not by separate computation, but from a table of ages constructed by the examiner for the month in which he is working. This method prevents many errors of computation.

School, Class, Caste and Social Status are to be filled in by the examiner in consultation with the teacher, and verified as far as possible from school records.

The Teacher's Estimate of Intelligence is to be taken before, and independently of, school marks. In recording School Standing, the number of marks out of a given maximum, secured by the boy during a fixed period (e.g., one year), should first be entered. The relative standing of all the boys in a class or school may be subsequently ascertained from a table of percentages computed and arranged in order of excellence.

It is important that the examiner should sign and date each form when the tests are given.

### § (4) The Order in which Tests are to be Given

A sample scoring sheet is shown in § 5. The order of tests as given in this sheet is to be observed *in conducting an examination. In the case of the* first ten tests, which constitute the Brief Scale, this order is determined by the necessity of gaining *rapport* with the child, and by a natural logical sequence. No test is so simple and so sure to dispel fear or shyness as the first few lines of the Knox Cubes (Test 1). In the test requiring the comparing and arranging of Weights (Test 2), the materials are not dissimilar, but the language used by the examiner becomes somewhat more difficult. *In the Goddard Form*board (Test 3), there is still no language response required from the child, but he invariably comes one step further in his zest to excel himself. The whole examination has become a game to him. *In Test 4,* Repeating Digits, the child uses his own voice, but does not have to reason or weigh his words. Repeating

Digits Backward (Test 5) follows logically, and in a way has been preceded by a practice series. The introductory word, "*lekin*" ("but") in this test implies that Test 4 has just preceded. The Repeating of Syllables (Test 6) carries oral response further, but does not even yet demand reflection. Test 7, Pictures, serves as the final step in putting the child at his ease, while at the same time it requires discriminating verbal response. The answers to increasingly difficult Questions (Test 8), and the giving of Words (Test 9), may then follow. With the Drawing of the Two Designs (Test 10) the Brief Scale is completed, and almost all forms of response will have become familiar, the child being prepared to complete the examination in an attitude of interested co-operation.

Except where a kind of logical sequence suggests a different grouping, Tests 11-35 are arranged in the general order of difficulty as determined by the pass percentages at the several ages. The types of response required will be found to be sufficiently varied to avoid monotony and fatigue. With two possible exceptions, they should be given in the order shown. Tests 11 and 12, Copying a Square and Copying a Diamond, may be given *before* Test 10, Drawing Two Designs, as a sort of practice series. These three are the only tests in which the child must use a pencil with any great skill. If this order is followed it is, of course, to be noted that the points gained for the Square and Diamond do not enter into the total Brief Scale score. In a similar way, it may be desired to give Tests 13 and 14, Prettier Faces and Missing Features, *before* Test 7, Pictures (Description and Interpretation). In this case, again, the points scored must not be included by mistake in the Brief Scale score.

## § (5) Sample Scoring Sheet

A separate Scoring Sheet, as reproduced in the following six pages, is used for each child examined. The first page is reserved for general information (*cf. § 3*).

The inner pages of the form give space for the scoring of all the tests of the Point Scale in order. In each case the separate items within the tests are referred to in an abbreviated form which will be clearly intelligible in connection with the full text (cf. § 6). The points scored in the several items as well as in the total are to be noted. Notes upon unusual answers may be indicated by a star and entered on Page 4 of the form. Full directions for the administration and scoring of all tests are given in the body of the text. Seven additional tests are shown, for which data are desired. These are discussed in § 7.

The maximum score for each test is shown in the first column at the right side of the form. In this column the figures emphasised indicate the nine non-verbal tests which constitute the "Non-Verbal Scale," and separate spaces are given for recording the total score on these nine tests.

# SAMPLE SCORING SHEET (p. 1)

## THE HINDUSTANI BINET-PERFORMANCE POINT SCALE

4TH SERIES, 1924

*General Information to be Secured for Each Case Examined*

Serial Number.....

Name.....

Date of Birth (from school register)..... ..... ..... .....

Age (at date of examination).... ..... ... ...

School..... ..... ..... .....

Class..... .....

Father's Name..... ..... .....

Father's Occupation..... ..... .. .....

Caste.....Sub-caste.....

Residence..... ..... ..... . ..

Social Status..... .....

Teacher's Estimate of Intelligence:

Very Inferior ( ) Inferior ( ) Average ( )
Superior ( ) Very Superior ( )

School Standing:

Very Poor ( ) Poor ( ) Average ( )
Good ( ) Very Good ( )

Mental Age (PS).....(BS)..... .....(NVS) .. .. .. . .

Hindustani Intelligence Quotient (PS).....(BS).....(NVS). ... ..

Examiner.....

Date of Examination..... ..

## SCORING SHEET (pp. 2-3)

No. .....Name.....Age.....Caste.....

Brief Score.....Non-Verbal.....Point Score.....MA.....HIQ ....

---

Max. Points

**1.** N-V. KNOX CUBES. Three lines, (1); four lines, (2), etc.

A 1234 ..... C 1432 ..... G 13124 .....
X 12343..... D 1423 ..... H 143124.....
Y 12342..... E 13243..... I 132415.....
B 1324 ..... F 14324..... J 142341..... **10**

**2.** N-V. COMPARING WEIGHTS.

3–15, 21–6, 15–3, all three correct, (1).....

3–6–10–15–21, correct order, three trials, each trial, (1); a..... b..... c..... **4**

**3.** N-V. GODDARD FORM-BOARD. Best of three trials.

1–9 Secs., (9); 10–11, (8); 12–14, (7); 15–17, (6); 18–20, (5); 21–23, (4); 24–27, (3); 28–35, (2); 36–45, (1); 46 and upward, (0).

First trial..... Second..... Third..... **9**

**4.** REPEATING DIGITS FORWARD. Two digits, (1); 3, (2); 4, (3); 5, (4); 6, (5); 7, (6).

| | | | F | B |
|---|---|---|---|---|
| 37 | 64 | 72 | ..... | ..... |
| 914 | 286 | 539 | ..... | ..... |
| 3681 | 5749 | 8526 | ..... | ..... |
| 52947 | 63852 | 97318 | ..... | ..... |
| 251364 | 853916 | 471582 | ..... | ..... |
| *9684751* | *4827365* | *5928136* | ..... | ..... |
| | | | ..... | ..... |

**6**

**5.** REPEATING DIGITS BACKWARD. Two digits, practice series, (0); 3 digits (3 trials), each correct, (1); 4, 5, and 6 digits (3 trials each), each correct, (1). **12**

Max. Points

6. REPEATING SYLLABLES.

"Rām" ..... no error, (1).

"Gāṛī" ..... no error, (1).

"Khush".....1 error, (2); 2 or 3 errors, (1); 4 errors, (0).

"Sair".....1 or 2 errors, (2); 3 to 5 errors, (1); 6 errors, (0).

"Guḍḍi".....1 error, (2); 2 or 3 errors, (1); 4 errors, (0).

"Tut".....no error, (1).

"Kẖāmoshī".....no error, (1). 10

7. DESCRIPTION AND INTERPRETATION OF PICTURES.

(*a*) Each picture described in terms of actions and characteristics, (1); (*b*) each interpreted imaginatively, (2). Note that (*b*) includes and implies (*a*).

House.....Village.....Ekka..... 6

8. QUESTIONS. Each correct response, (1).

Sleep ..... Cold ..... Hungry .....

Break..... Late ..... Hurt .....

Opinion ..... Important..... Actions ..... 9

9. WORDS IN TWO MINUTES. Four or less, (0); 5–9, (1); 10–14, (2); 15–19, (3); 20–24, (4); 25–29, (5); 30–34, (6); 35–39, (7); 40–44, (8); 45–49, (9); 50 and upward, (10).

1st half min. ..... 2nd half min. .....

3rd half min. ..... 4th half min. .... .....

Total..... 10

10. N-V. DRAWING TWO DESIGNS.

Rectangular design A..... (2); B..... (1); C.... (0).

Greek key design a..... (4); b..... (2); c.... (0). 6

Maximum Brief Scale Score 82

| | Max. Points |
|---|---|
| **11.** N-V. COPYING A SQUARE. Satisfactory drawing, (1). | 1 |
| **12.** N-V. COPYING A DIAMOND. Satisfactory drawing, (1). | 1 |
| 13. CHOOSING PRETTIER FACES. *Three items,* each correct, (1). 1..... 2..... 3..... | 3 |
| 14. MISSING FEATURES. Four items, each correct, (1). Eye..... Mouth..... Nose..... Arm..... | 4 |
| 15. FINGERS. Right hand.....(1); left hand..... (1); both hands.....(1). | 3 |
| 16. SIX COINS. All correct.....(2); 1 error..... (1); 2 or more errors.....(0). | 2 |
| 17. CONCRETE DEFINITIONS. (*a*) By use, each correct definition, (1); (*b*) Superior to use, each correct definition, (2). Sher..... Sipāhī..... Ālū ..... Dukān ..... | 8 |
| 18. ABSTRACT DEFINITIONS. Each correct definition, (1). Rahm..... Badlā..... Khairāt..... Hasad..... Insāf..... | 5 |
| 19. ADDING 3 2-ANNA AND 3 1-ANNA PIECES. Correct answer, (1). ..... | 1 |
| 20. COUNTING BACKWARD FROM 20 TO 1. Correct, or only 1 error, (1); more than 1 error, (0). ..... | 1 |
| 21. MAKING CHANGE. 8–3..... (1); 12–9..... (1); 16–3.....(1). | 3 |
| **22.** N-V. ADAPTATION BOARD. Five moves. 1..... (1); 2..... (1); 3..... (1); 4..... (1); 5..... (1). | 5 |
| **23.** N-V. OBLONG CARD. Correct placing, (1). ..... | 1 |
| 24. COLOURS. Red ..... (1) Green ..... (1) Blue ..... (1) Yellow ..... (1) | 4 |

Max. Points

25. DIFFERENCES.
Wood-glass..... (1); Stone-egg..... (1);
Milk-water..... (1). 3

26. SIMILARITIES BETWEEN TWO THINGS.
Iron-silver..... (1) Ber-āmm..... (1)
Gaḍḍā-tonga..... (1) Wood-coal ..... (1) 4

27. SIMILARITIES BETWEEN THREE THINGS.
Sāṇp-gāe-chiṛīyā..... (1)
Kitāb-ustād-akhbār..... (1)
Ūnn-rūī-chamrā..... (1)
Chāqū-paisā-kīl..... (1)
Phūl-ālū-darakht..... (1) 5

28. WORDS IN SENTENCES. Three items. Three words in one sentence, each correct item, (2); three words in two sentences, each correct, (1).
Laṛkā-gend-daryā..... (1) or (2)
Kām-rupāyā-ādmī..... (1) or (2)
Rāsta-bazār-bāgh..... (1) or (2) 6

29. BALL AND FIELD. Stanford samples, 1–5, (5); 6, 8, and 10, (4); 7, 9, 12, 13, 18, (3); 11, 14, 15, 16, 17, 19, 20, (2); 21, 22, 23, (1); 24 to 30, (0).
..... 5

30. RHYMES. Two good rhymes for either word, (1); two good rhymes each for both words, (2); three or more for one, and at least two for the other, (3).
Āg..... ( ); Kab..... ( ). 3

31. ABSURDITIES.
Horse..... (1) Girl..... (1)
Train..... (1) Fall..... (1) 4

32. PAPER TEST.
Drawing holes..... (1)
Finding the Rule 1..... (1); 2..... (1);
4..... (1); 8..... (1); 16..... (1). 6

| | | Max. Points |
|---|---|---|
| 33. | N-V. HEALY FORM-BOARD. *Forty secs. or less*, (3); 41–80 secs., (2); 81–120 secs., (1); more than 120 secs., (0). ..... | 3 |
| 34. | ENCLOSED BOXES. 121..... (1); 122..... (1); 133..... (1); 144..... (1) | 4 |
| 35. | *RAJAH AND DEPUTY COMMISSIONER.* Each correct difference, (1). *a*..... (1) *b*..... (1). *c*..... (1) | 3 |
| | Maximum Point Scale Score..... | 170 |
| | Maximum Non-Verbal Score..... | 40 |

SEVEN ADDITIONAL TESTS.

A1. NAMES: Knife....., Pen....., Key.....

A2. REPEATING SEVEN SYLLABLES: Dog....., Cat....., Hot.....

A3. LONGER LINES: (*a*) ....., (*b*) ....., (*c*).....

A4. TRIPLE ORDER: Knife....., Door....., Box.....

A5. COUNTING THIRTEEN PICE: .....

A6. CLOCK PUZZLE: (*a*) ....., (*b*) ....., (*c*) .....

A7. INGENUITY TEST: 357....., 578....., 497.....

# THE TEXT OF THE TESTS

## § (6) Text of the Tests, with Procedure, Notes, and Directions for Scoring

Under each test will be found (*a*) "Procedure," i.e. the exact words to be used by the examiner in administering the test; (*b*) "English Version," a close English translation of the Hindustani test; (*c*) "Notes," more fully descriptive of the test, or of examining method; and (*d*) "Scoring," fully explaining the assignment of points to the items of the test.

The Hindustani is done into Roman type, fully pointed, except where a bold unpointed type has been used to indicate stress. The pointed Urdu is completely phonetic. What we have called the "English Version" is not a standard English version of the test. Nor is it an English equivalent of our Hindustani test intended for use in examining children.[1] It is a fairly literal (in many cases an awkwardly literal) translation of the Hindustani test, and is only introduced for the purpose of comparing the character and difficulty of the Hindustani test with that of the original English test on which it is based. Such comparison will in every case of great divergence suggest some problem of adaptation which has necessitated change. It is also possible thus to detect by mere inspection many cases of supposedly "equivalent" tests which are not really of equal difficulty.

It may be noted that the first ten of these tests constitute the Brief Scale, discussed in §§ 11, 28 and 29.

[1] Some teachers might prefer to exhibit their own and their pupils' English rather than to employ the vernacular tests!

The nine Non-Verbal tests (cf. § 12) are marked NV, and their serial numbers are printed in bold type.

**1.** N-V. Knox Cubes (P.P. Test XV, p. 67).[1]

PROCEDURE: *Achchhī tarah dekho, aur jāise maiṇ karūṇ, wāise hī tum bhī karo.*

ENG. VER.: Watch carefully, and as I do, you do in the very same way.

NOTES. Five similar cubes, one inch in each dimension, are employed. One of these is used for tapping. The other four are fastened to a base at a distance of one inch apart. They are thus kept correctly and permanently spaced. Even so, school desks and tables are often so uneven that special precaution has to be taken in order that the block of cubes may not tilt or twist while it is being tapped.

The examiner taps the blocks with the fifth cube, from his right to his left, line by line, in the order shown in the table printed in the scoring sheet, the speed being about one tap per second. The child standing opposite taps from his left to his right. After each line the examiner places the cube on the table in front of the child, at a convenient point near the child's right hand, this serving as a gesture indicating that he is to pick it up at once and proceed.

[1] Full discussion of the originals of these tests may be found in the sources cited immediately after each title. The abbreviations used are as follows;

"S.R.", Stanford Revision, cf. Terman, op. cit., Age and Serial Number of test indicated.

"B.", Burt, cf. Burt, op. cit. (London County Council Tests), Serial Number of test indicated.

"P.P.", Pintner and Paterson, op. cit., No. of test, and page indicated.

"B.S.", Binet-Simon, 1911 Scale; cf. Binet and Simon, *The Development of Intelligence in Children*, Kite's translation, pp. 274 ff., Age and Serial Number of test given

The examiner continues until the child fails at least three times in succession, marking each line in the scoring sheet with a plus or a minus, as the case may be. Care should be taken not to distract or discourage the child by marking the score in a conspicuous manner.

The position of examiner and child facing each other, and of the four blocks on the table, is shown in the following diagram:

CHILD

| 4 | 3 | 2 | 1 |
|---|---|---|---|

EXAMINER

It will be seen that the blocks from 1 to 4 are from right to left for the examiner, and from left to right for the child.

SCORING. For only 1 or 2 lines passed, (0); for 3 lines passed, (1); 4 lines, (2); 5 lines, (3); etc., etc., to 12 lines passed, (10). Maximum score, (10).[1]

2. N-V. Comparing and Arranging Weights (S R. V 1, IX 2; B. 46; B.S. X 1).

(1) COMPARING TWO WEIGHTS. (*a*) 3-15; (*b*) 21-6; (*c*) 15-3.

PROCEDURE:

(*a*) *In do dibbion men se kaunsi bhāri hai?*
(*b*) *In donon men se?*
(*c*) *In donon men se?*

ENG. VER.:

(*a*) Of these two little boxes, which is the heavy one?

[1] For further discussion of this test cf Pintner and Paterson, *Scale of Performance Tests*, p 68.

(*b*) Of these two?
(*c*) Of these two?

NOTE. In the first part of the test three pairs of greatly differing weights are placed before the child. The pairs are (*a*) the 3- and 15-gram weights; (*b*) the 21- and 6-gram weights; and (*c*) the 15- and 3-gram weights. The order given prevents guessing.

SCORING. The child must indicate the heavier weight correctly in ALL THREE trials. Maximum score, (1).

(II) ARRANGING FIVE WEIGHTS.

PROCEDURE: *Yih ḍibbiāṇ jo haiṇ, ek jāisī dikhāī deṭī haiṇ yā nahīṇ? Hāṇ, lekin ek jāisi nahin haiṇ. Har ek ke bojh meṇ farq hai.*

*Ab sab se bhārī lekar* (pointing to the place) *is jagah rakho.*

*Aur us se halkī* (pointing) *is jagah; phir* (pointing to the next place) *jo us se halkī; aur sab se halkī is jagah. Shuru' karo.*

(If the child hesitates,) *Sab se bhārī is taraf, aur sab se halkī is taraf.*

ENG. VER.: These little boxes here appear to be all alike, don't they? Yes, but they AREN'T all alike. Each one's WEIGHT is different.

Now take the heaviest and put it in (pointing to the place) THIS spot, and the one next lighter than it (pointing) in THIS spot; THEN (pointing), the one lighter than it—and the lightest of all in (pointing) THIS spot. Begin.

(If the child hesitates,) The heaviest one on THIS side and the lightest one on THIS side.

NOTES. The crucial phrase, *Har ek ke bojh men farq hai*, is simple and explicit. The word *bojh* is always understood by young children. This is not true of *wazn* or other terms which might be used for "weight."

The weights used are small-sized Japanese match boxes, 14 × 23 × 43 mm., or $\frac{1}{2}$ × $1\frac{1}{8}$ × $1\frac{3}{4}$ ins. in dimension. They are weighted, stuffed with cotton, and glued shut. Outside they are coated with black enamel, making them absolutely uniform as well as neat in appearance. Stout uniform pill boxes similarly prepared and of proportionate weight are also suitable.

In the Binet tests the weights used are 3, 6, 9, 12, and 15 grammes. As the proportionate differences are much less between the heavier weights than between the lighter ones, children often make chance errors in judging the heavier boxes, even though their method convinces the examiner that they fully understand the problem. As this test is not intended to measure sensory acuity, it seems desirable to lessen the likelihood of such errors by increasing the proportionate differences between the weights at the heavier end of the series. For this reason we have fixed our weights at 3, 6, 10, 15, and 21 grammes. Thus the proportional increments are still not constant, but instead of 100, 50, 33, and 25 per cent., as in the old series, they are now 100, 66, 50, and 40 per cent. respectively.

We have used on the boxes the distinguishing marks suggested by Burt, viz. BINET, to avoid the necessity of the examiner's re-weighing the boxes after they have been arranged by the child. In tolas our boxes weigh $\frac{1}{4}$, $\frac{1}{2}$, $\frac{5}{8}$, $1\frac{1}{4}$, and $1\frac{3}{4}$ t.

The five boxes are placed in a chance order with the lettered sides down before the child, and are mixed like a hand of dominoes before his eyes.

SCORING: Three trials are given. Score for each correct arrangement, (1). Maximum score, (3).

3. N-V. Goddard Form-board (P.P. Test II, p. 30).

PROCEDURE: *In ṭukṛoṇ ko in kī apnī apnī jagah meṇ rakhnā hai. Dekheṇ tum kitnī jaldī rakh sakte ho.*

*Shuru' karo.*

*Phir rakho, aur jaldi karo.*

*Phir rakho, bahut jaldi rakho.*

(If any block is tilted or not exactly placed.) *Ṭhīk ṭhīk rakho.*

ENG. VER.: These pieces are to be put each in its own place. Let us see how fast you can put them in. Begin.

Put them in again, and do it QUICKLY.

Put them in again, put them in VERY fast.

(If any block is tilted or not exactly placed.) Put them in just right, exactly.

NOTES. The Goddard Form-board, known otherwise as the Seguin Form-board, is described by R. H. Sylvester in his monograph on "The Form-board Test."[1] The reader should consult also the special discussion of the Goddard Form-board, relative to a lack of completeness in Sylvester's specifications, cf. § 21.

The method of giving the test as quoted by Pintner and Paterson is as follows:

[1] Sylvester, R. H., *Psychological Monographs*, Vol. XV, No. 4, Whole No. 65 (1913).

"The Form-board lies horizontally on a table, its lower edge even with the edge of the table next to which the child stands. The table must be low enough to allow him to lean well over the board and to look down upon its center. The blocks are placed in three piles on the table, next to the upper edge of the board, no block in the pile nearest its recess, the lozenge and the elongated hexagon not in the same layer, and the star in the lower layer. This is the arrangement at the beginning of each of the three trials. The child is introduced to the test with no introduction concerning it except, 'Let us see how quickly you can put the blocks into place.' His first reactions and his behaviour until he succeeds in getting the blocks into place or fails are carefully studied. After this first trial he is given any instruction necessary to make him understand where the blocks belong and that he is to replace them as quickly as possible. Then he is given a second and third trial, in which he is encouraged and urged in every way to make the best record of which he is capable."

A record of the time of each of the three trials is kept. The best of the three trials is the child's final score on this test. The Form-board with the blocks all in place is ordinarily left exposed on the examiner's table. When the test is to be given to the child it is placed before him, and the blocks are removed from their places and put in the three piles before his eyes. No further demonstration or explanation than that included in the two sentences given above under "Procedure" is ever found necessary.

SCORING. Nine seconds or less, (9); 10-11 secs., (8); 12-14 secs., (7); 15-17 secs., (6); 18-20 secs., (5); 21-23 secs., (4); 24-27 secs., (3); 28-35 secs., (2); 36-45 secs., (1); 46 secs. or more, (0). Maximum score, (9).

4. Repeating Digits Forward (S.R. III Al., IV 6, VII 3, X Al. 1: B. 2, 8, 18, 28, 41, 52; B.S. VIII 5).

PROCEDURE: *Suno. Jo kuchh main bolūn, tum mere pīchhe bolo. Pahle achchhī tarah suno aur phir mere pīchhe bolo.*

| | | |
|---|---|---|
| 37 | 64 | 72 |
| 914 | 286 | 539 |
| 3681 | 5749 | 8526 |
| 52947 | 63852 | 97318 |
| 251364 | 853916 | 471582 |
| 9684751 | 4827365 | 5928136 |

ENG. VER.: Listen. Whatever I say, you say (it) after me. FIRST carefully listen, and THEN say (it) after me.

NOTES. It is necessary to stress the words printed in bold type as it is a common practice in schools to ask children to repeat word by word, or phrase by phrase, after the teacher. They are always ready to break in, expecting him to pause after two or three syllables. In all the Digits tests, and in Repeating Syllables this precaution has to be taken. If it is not taken the child is almost sure to spoil the test by making necessary a repetition of the digits or words. In case such a repetition has to be made in either of the Digits tests, other combinations of digits from the blocks of figures are to be given.

In this test the child is given three trials with each item. As soon as he has correctly repeated 2 or 3 or 4 digits, etc., as the case may be, the examiner may proceed directly to the next higher number. The digits must be pronounced without rhythm or emphasis, at a rate of two per second.

The blocks of figures are from Burt.[1]

[1] For further discussion of procedure cf. Burt op. cit., p. 25

SCORING. Two digits correctly repeated, (1); 3 digits, (2); 4 digits, (3); 5 digits, (4); 6 digits, (5); 7 digits, (6); Maximum score, (6).

5. Repeating Digits Backward (S.R. III Al. 2, IX 4, XII 6, XVI 5, XVIII 5).

PROCEDURE: *Ab jo maiṇ kahūṇ, tum mere pīchhe bolo, lekin ulṭā karke bolo.*

*Agar maiṇ bolūṇ,* "3, 7," *tum bolo* . . . . "7, 3." (If necessary,) *Agar maiṇ bolūṇ* "6, 4," *tum kyā bologe?* . . . "4, 6."

ENG. VER.: Now what I say, you say after me, but turn it about and say it.

If I say "3, 7," you say . . . . "7, 3."

(If necessary add,) If I say "6, 4," what will you say? . . . . "4, 6."

NOTES. Contrary to Terman's direction[1] for which he offers no reason, we give this test immediately after Repeating Digits Forward. It seems greatly to simplify the language necessary for explaining what is to be done, and does not apparently increase or decrease the difficulty of the test itself. In the second sentence used by the examiner, the child almost invariably breaks in with "7, 3," as he is encouraged to do by the examiner's intonation and pause, "*tum bolo* . . . ." In such case the third sentence becomes unnecessary.

In this test all three trials must be given with each successive number of digits, until the child has failed an entire line.

SCORING. Two digits, practice series, (no score);

[1] Cf. Terman, op. cit., p. 207.

3 digits, 3 trials given, each correct response, (1)—total, (3); 4 digits, each correct response, (1)—total, (3); 5 and 6 digits, similarly, each correct response, (1)—total, (6). Maximum score, (12).

(This test may be extended, and points awarded similarly, in case any child can go on to 7 or 8 digits backward.)

6. Repeating Syllables (S.R. III 6, IV Al., VI. 6; B. 7, 14, 30, 59; B.S. XV 3).

PROCEDURE: *Jo kuchh maiṇ bolūṇ, tum mere pīchhe bolo. Achchhī tarah suno.*

(If necessary), *Nahīṇ, jab maiṇ bol chukūṇ, tab mere pīchhe bolo.*

(*a*) *Us kā nām Rām hai. Wuh achchhā laṛkā hai.*

(*b*) *Gāṛī chaltī hai, aur sīṭī bajtī hai.*

(*c*) *Is waqt ham bahut khush haiṇ, aur hamārā chhoṭā kuttā bhī khel rāhā hai.*

(*d*) *Ham lambī sair kareṇge. Jaldī se mujhe merī achchhī ṭopī de do.*

(*e*) *Mohan apnī chhuṭṭīoṇ meṇ bahut khush rāhā. Wuh har roz guḍḍī uṛātā thā.*

(*f*) *Tūt kā darakht kā sāyā, jis ke nīche bachche khel rahe haiṇ, bahut 'umda aur ṭhaṇḍā hai.*

(*g*) *Ab qarībaṇ deṛh bajā hai. Ghar meṇ bilkull khāmoshī hai, aur billī so rahī hai.*

ENG. VER.: What I say, you say after me. Listen carefully. (If necessary.) No, when I have FINISHED speaking, THEN speak after me.

(*a*) His name is Rām. He is a good boy.

(*b*) The train is moving, and the whistle is blowing.

(*c*) Now we are very happy, and our little dog is playing too.

(*d*) We are going to take a long walk. Quickly give me my good hat.

(*e*) Mohan was very happy during his holidays; he was flying kites every day.

(*f*) The shade of the mulberry tree, under which the children are playing, is very beautiful and cool.

(*g*) Now it is about half past one o'clock. In the house there is absolute stillness, and the cat is sleeping.

NOTES. In order to prevent the child's breaking in, the examiner should take care not to hesitate or to allow his voice to fall after the first phrase or clause of any of the sentences.

The preliminary conversation given by Terman for the Stanford tests, III 6 and IV A1., is not necessary. We give this test after the Digits tests, when the idea of repeating exactly what the examiner has said is still fresh in the child's mind.

All of our sentences are similar to those given by Terman. Certain ideas contained in the Stanford and the London sentences are obviously unsuitable for Panjabi children, as, e.g. going fishing, catching a mouse in a trap, apple tree, straw hat, snow in winter. It may even be that an expression such as "I have a little dog" would introduce unnecessary complications, as domestic dogs are not common in Indian houses and are peculiarly offensive to orthodox Muhammadans.

SCORING. Sentence (*a*) without error, (1). (*b*) Without error, (1). (*c*) Correct, or with only one error, (2); 2 or 3 errors, (1); 4 errors, (0). (*d*) Correct, or with only

1 or 2 errors, (2); 3 to 5 errors, (1); 6 errors, (0). (*e*) Correct, or with only one error, (2); 2 or 3 errors, (1); 4 errors, (0). (*f*) Without error, (1). (*g*) Without error, (1). Maximum score, (10).

7. Description and Interpretation of Pictures (S.R. III 3, VII 2, XII 7; B. 6, 29, 56; B.S. VII 2, XV 4).

PROCEDURE: *Is taswīr ko gaur se dekho, aur is kī bābat sab kuchh batāo.*

(If necessary, repeat, or add,) *Is kā matlab kyā hai?*

ENG. VER.: Look at this picture intently, and then explain (to me) everything about it.

(If necessary add,) What does it mean? or repeat.

NOTES. The pictures used for American children with the Stanford revision are obviously out of the question for the Panjab, and the Binet pictures are quite impossible. The unfamiliarity of the scenes gives one to expect little more than enumeration of objects. Even the objects themselves are unfamiliar, as, e.g., eggs in a basket, or a canoe in the rushing river.

We have prepared three pictures keeping in mind the necessity of depicting scenes equally familiar to city and country children in the whole of North India. The type of scene represented in the first three of the Stanford pictures has been roughly adhered to. Thus (*a*) our Household Scene may be said to correspond to the Dutch Home, (*b*) our Village scene to the Post Office picture, and (*c*) our Traveller Hailing a Cart to the Canoe picture.

Our phraseology is the result of much experimentation and seems to be fully satisfactory. The phrase, *Is kī bābat sab kuchh batāo* (Tell me all about it) seems

to include all the possibilites of reply as well as to avoid suggesting mere enumeration. The subsequent phrase, *Is kā matlab kyā hai?* (What does it mean?) is added in case the boy does not give a superior answer on his own account. This is not equal to telling him to make up a story about the picture, but seems a legitimate aid in case he is just about to do so but does not know whether to risk it or not.

Replies are evaluated as in Terman.[1] Mere enumeration of objects proves too easy for the ages with which we have dealt, and consequently does not entitle to credits in our schedule of scoring.

SCORING. (*a*) For each picture described in terms of actions and characteristics, (1); (*b*) for each picture interpreted imaginatively, (2). Note that (*b*) includes and implies (*a*). Maximum score, (6).

8. Questions (S.R. IV 5, VI 4, VIII 3, X 5; B. 37, 50; B.S. IX 5, X 4).

PROCEDURE: (*a*) *Jab tumheṇ nīnd āe, to tumko kyā karnā chāhīye?*

(*b*) *Jab tumheṇ sardī lage, to tumko kyā karnā chāhīye?*

(*c*) *Jab tumheṇ bhūk lage, to tumko kyā karnā chāhīye?*

(*d*) *Jab tum se kisī aur kī chīz ṭūṭ jāe, to tumheṇ kyā karnā chāhīye?*

(*e*) *Agar school jāte waqt rāste meṇ der hone kā ḍar ho, to tum ko kyā karnā chāhīye?*

(*f*) *Agar tumhāre sāthī se tum ko achānak choṭ lag jāe, to tuṃ ko kyā karnā chāhīye?*

[1] Cf. Terman op. cit., pp. 190 ff. and 302 ff.

(*g*) *Jab tumheṇ koī ādmī us shakhs kī bābat kuchh pūchhe, jis ko tum achchhī tarah se nahīṇ jāute, to tumheṇ kyā karnā chāhīye?*

(*h*) *Jab tum ek bahut zarūrī bāt ko shuru' karne lago, to tumheṇ kyā karnā chāhīye?*

(*i*) *Kyā waja' hai ki hameṇ kisī shakhs kī pahchān us kī bātoṇ se nahīṇ balki us ke kāmoṇ se karnī chāhīye?*

ENG. VER.: (*a*) When sleep comes upon you, what should you do?

(*b*) When you get cold, what should you do?

(*c*) When you get hungry, what should you do?

(*d*) When by you a thing belonging to somebody else is broken, what ought you to do (about it)?

(*e*) If at school-going time, on the way, fear of being late should come upon you, what ought you to do?

(*f*) If by a companion accidentally (suddenly), an injury should be done to you, what ought you to do?

(*g*) When somebody asks you anything about a man whom you don't know very well, what ought you to reply?

(*h*) When you are about to begin some very important thing, what ought you to do?

(*i*) What is the reason that we ought to estimate (recognise) a man not from his words but rather from his deeds (works)?

NOTES. Questions (*a*), (*b*) and (*c*) are obviously very simple. If they are failed, the examiner need not pro-

ceed with the harder questions. If they are passed, all of the remaining six questions must be given. While the second group of three questions is, in general, easier than the third group, it cannot be inferred that a child who fails in them will also fail in those that follow.

Terman's analysis of responses to equivalent questions is quite adequate.[1]

Repetition is permitted, but no change in the wording, except in (*f*). The word *achānak* seems sometimes to offer difficulty, and, if necessary, this question may be repeated in the following form: "If a playmate hits you, but does not hit you knowingly and with intention, what . . . ?" i.e., *tum ko mārē, par jān būjh ke na māre.* The Hindustani phrase, *jān būjh ke*, "knowingly and with intention," is immensely simpler than its English equivalent would suggest.

In (*e*) if the answers are suspicious, the practice of the particular school is enquired into; and in (*f*) if both forms of the question have been given, retaliatory sentiments are rejected.

One very characteristic reply to question (*h*) on the part of a Muhammadan boy is "Repeat the sacred phrase, 'Bismillah.'" This answer is, of course, to be counted correct.

SCORING. There are nine questions in all. For each correct response, (1). Maximum score, (9).

9. Words in Two Minutes (S.R. X 6; B. 51; B.S. XII 3).

PROCEDURE: *Tum do minit men kitne lafz bol sakte ho? Jitne lafz tum ko ate hain jaldī jaldī bolte jāo. Main ginūngā.*

[1] Cf. Terman, op cit., p. 268.

*Jo lafz chahte ho, bolo, jāise ki "bādal," "kuttā," "mez," "khush," "sabz," . . . . Bolo.*

ENG. VER.: In two minutes how many words can you say? As many words as you know, quickly go on saying them. I will count them. Whatever word you wish, say it—such as "cloud," "dog," "table," "happy," "green," . . . . Speak (go on).

NOTES. The three-minute test in the usual form seemed to us to be unnecessarily long drawn out, the third minute not really supplying additional data of significance, but adding greatly to the fatigue and monotony of the examination.

The five type-words given here are not all nouns as in Yerkes' and Burt's similar tests. One adjective is added to Terman's list to avoid starting the child on any particular and limited set of associates. If the child includes these same words in his reply, they are counted.

SCORING. The number of real words given in each half-minute period is indicated in the scoring sheet. Repetitions are not counted. For 4 words or less in 2 minutes, (no score); 5-9 words, (1); 10-14, (2); 15-19, (3); 20-24, (4); 25-29, (5); 30-34, (6); 35-39, (7); 40-44, (8); 45-49, (9); 50 and upward, (10). Maximum score, (10).

**10.** N-V. Drawing Two Designs (S.R. X 3; B. 48; B.S. X 2).

PROCEDURE. *Ab maiṇ do shakleṇ* (show for a mere instant) *dikhāūṇgā, aur phir chhipā lūṇgā. Bilkull thoṛe waqt ke liye dikhāūṇgā. Tum dekh lo, aur phir is jagah khenco.* (Hand the child a pencil.)

*Ab dekho* (show the designs, and note the time); *achchhī tarah dekho. Dekhte raho. Donoṇ ko dekho.*

(Placing designs face downward on the table,) *Ab (is jagah) khenchо.*

ENG. VER.: Now (here are) two figures (show for the merest instant) which I am going to show you; and then (placing face downward), I will hide them. For a *very short* time I am going to show them to you. You look at them and then in this space (pointing) draw them. (Hand him a pencil.) Now look! (Show the designs and note the time.) (While he examines them, say at regular intervals,) Look carefully. *Keep* looking. Look at them *both*. (At the end of ten seconds hide the card and say,) Now draw them *here*.

NOTES. In this test there is a tendency for the child to become involved in the attempt to remember a somewhat intricate set of directions and explanations, and to waste time that should be given to examining the drawings. There is also an almost irresistible tendency to begin the drawing, or to reach for a pencil, when only one design has been examined. Our procedure requires much practice on the part of the examiner, but prevents the common errors mentioned. No unnecessary explanation of *shakleṇ* (figures) is required, as the fleeting glimpse of them is sufficient to let the child know that he will have to deal with simple black line designs. Paper, pencil, place, are all indicated at natural points largely by means of gesture. The three short phrases thrown in during the ten-second period do not distract

but serve rather to sharpen attention, and prevent partial or interrupted examination.

Terman's figures and scoring-card are used.[1]

SCORING. (*a*) The drawings of the rectangular design are marked *A*, *B* and *C* respectively, according to the Stanford chart of "correct," "half-correct," and "unsatisfactory" attempts.

(*b*) The drawings of the "Greek key" design are in the same way marked *a*, *b* and *c*.

Rectangular designs: *A* drawings, (2); *B* drawings, (1); *C* drawings, (0).

Greek key designs: *a* drawings, (4); *b* drawings, (2); (*c*) drawings, (0). Maximum score, (6).

THE ABOVE TEN TESTS complete the Brief Scale. Maximum Score in the Brief Scale, (82).

**11.** N-V. Copying a Square (S.R. IV 4).

PROCEDURE: *Is shakl ko dekho. Ab tum isī tarah kī ek shakl banāo. Is jagah khencho.*

ENG. VER.: Look at this figure. Now you make a figure just like this. Draw it here.

NOTE. A square figure one and one-half inches on a side is shown to the child (cf. list of materials, § 12). Terman's scoring-card is used in judging satisfactory and unsatisfactory drawings.

SCORING. For a satisfactory drawing, (1). Maximum score, (1).

**12.** N-V. Copying a Diamond (S.R. VII 6).

PROCEDURE: *Ab is kī naql karo. Is jagah isī tarah kī ek shakl khencho.*

[1] Cf. also Terman, op cit., p. 260.

ENG. VER.: Now make a copy of this. In this spot draw a figure just like this.

NOTE. A diamond 2¾ inches long, and 1½ inches broad, drawn in heavy black lines (cf. list of materials, § 12), is shown in the upright position to the child.

SCORING. Terman's scoring card is used in judging satisfactory and unsatisfactory drawings. For satisfactory drawing, (1). Maximum score, (1).

13. Choosing Prettier Faces (S.R. V 3; B. 11; B.S. VI 5).

PROCEDURE: (*a*) *In do taswīroṇ ko dekho. In meṇ se kaunsī khūbsūrat hai?*

(*b*) and (*c*) *In meṇ se kaunsī khūbsūrat hai?*

ENG. VER: Look at these two pictures. Which of them is the pretty one?

(*b*) and (*c*) Which of *these* is the pretty one?

NOTES. It is possible that the original Binet drawings might have given satisfactory results. It was thought better, however, to prepare a series of drawings using Indian types of faces. It is possible that the European features, and the absence of familiar head-coverings would affect an Indian child's judgment on the Binet pictures in this test and in test No. 14.

There seems to be no unnecessary diffidence about applying the term "beauty" to a masculine face. The world *Khūbsūrat* (beautiful) is used interchangeably for *handsome* and *pretty*. It has seemed simpler to use *taswīr* (picture) than *chihrā* (face, or countenance) or *mūṇh* (mouth, face).

The pairs of pictures are exhibited separately.

SCORING. Three items. *For each correct response*, (1). Maximum score, (3).

14. Recognizing Missing Features (S.R. VI 2; B. 32; B.S. VIII 3).

PROCEDURE: *Is taswīr meṇ kyā nuqs hai?*

(If necessary,) *Kis chīz kī kamī hai?*

(If the child says, "It has no body.") *Chihre kā kaunsā hissā kam hai?*

ENG. VER.: In this picture what defect is (there)?

(If necessary add,) What thing is omitted?

(If the child says, "It has no body.") What part of the *face* is missing?

NOTE. The Binet pictures have not been regarded as suitable to the Panjab. Apart from the unfamiliarity of the European type of face, there is the likelihood that the absence of turban or veil would suggest wrong answers otherwise avoidable. We have prepared simple drawings of Indian types which are suitable to Panjabi children, and which have the advantage of being less unpleasing *as pictures* (cf. § 13).

SCORING. *Four items. For pointing out the missing eye*, (1); *mouth*, (1); *nose*, (1); *arm* (or *hand*), (1). Maximum score, (4).

15. Giving Number of Fingers (S.R. VII 1; B. 20).

PROCEDURE: *Tumhāre daihne hāth meṇ kitnī uṇglīāṇ haiṇ?*

*Bāeṇ meṇ kitnī haiṇ? Donoṇ hāthoṇ meṇ kitnī haiṇ?*

(If necessary add,) *Nahīn, gimo mat; bagair gine ke batāo.*

ENG. VER.: On your right hand how many fingers are (there)?

On your left how many are there?

On both hands how many are there?

NOTE. A child who gives the answer, 4 on the right, 4 on the left, and 8 on both, is questioned further. If his answer shows that he was consciously discriminating between *aṇglīāṇ* (fingers) and *aṇgūṭhā* (thumb), he is given credit for a correct answer.[1]

SCORING. Right hand, correct reply, (1); left hand, (1); both hands, (1). Maximum score, (3).

16. Naming Six Coins (S.R. VI 5; B. 25, 43; B.S. IX 3).

PROCEDURE: (Pointing,) *Yih kyā hai?*

(If necessary,) *Hāṇ, lekin is ko tum kyā kahte ho?*

ENG. VER.: What is this?

(If necessary add,) Yes, but what do you call *this* piece?

NOTES. The coins used are the silver rupee (*rupāyā*), the silver eight-anna piece (*athannī*), the silver four-anna piece (*chawannī*), the silver two-anna piece (*duannī*), the nickel one-anna piece (*ānnā*), and a copper pice (*paisā*). The nickel 8-, 4- and 2-anna pieces are fairly common by this time, but may not be so universal in the country as the older coins. The values of these coins are roughly the same as those of the coins chosen in England and America for a similar test. They may be called the "Six Commonest Coins."

[1] Cf. Burt, op. cit., p. 35; Terman, op. cit., p 189.

The examiner repeats the question as above, pointing to each coin in succession. Neither examiner nor child should handle the coins or turn them over. If the child replies at first with a generic term, the second question is asked with the emphasis on the word *is* (this)[1]

SCORING. All six coins correctly named, (2); five correctly named, but one omitted or in error, (1); two or more errors, (0). Maximum score, (2).

17. Concrete Definitions (S.R. V 4, VIII 5; B. 27, 45; B.S. VI 2, IX 2).

PROCEDURE: *Sher kyā hai?* (If necessary,) *Sher kyā chiz hai? Sipahi kya hai?* Alu *kyā hai? Dukan kyā hai?*

ENG. VER.: What is a *tiger?* (If necessary,) What *thing* is a tiger? What is a *soldier?* A *potato?* A *shop?*

NOTES. Of the words used in the West for this test it was thought that *chair*, *fork* and *table* might not be equally familiar to city and country children. Chairs and tables are not universally used as domestic furniture, and forks are not used at meals. The word for fork is also identical with the word for *thorn*. The English word for *pencil* is taken over into Urdu and is a school word. *Balloon* would be unfamiliar in the English sense. The word for a toy fire-balloon might serve, but it again might not be equally familiar in villages and cities. Football would probably be known by all schoolboys, but again the word is the English one taken over into the vernacular. *Battleship* is out of the

[1] Cf. Burt, op. cit., p. 39

question, and while the *automobile* is now sufficiently common, the word for it is *motor*, taken over from the English.

In addition to the four words used above, we have tried as alternatives the following:

| | |
|---|---|
| *Gāṛī*—cart or carriage | *Gend*—ball |
| *Bandūq*—gun | *Madārī*—juggler |

The data upon these words are not yet sufficient to justify offering them as equivalents.

Replies are evaluated according to Terman's schedule of typical definitions.[1]

SCORING. (*a*) Definition *by use.* 4 words—each correct definition, (1); (*b*) Definition *superior to use.* The same 4 words—each correct definition, (2). Maximum score, (8).

Note the (*b*) definitions superior to use include and imply (*a*) definitions by use.

18. Abstract Definitions (S.R. XII 2; B. 60; B.S. XII 4).

PROCEDURE: *Rahm kyā hai? Badla kyā hai? Khairat kyā hai? Hasd kyā hai? Insaf kyā hai?*

ENG. VER.: What is *mercy*? What is *revenge*? What is *charity*? What is *envy*? What is *justice*?

NOTES. The five words of the Stanford Test XII 2 are used. Terman's analysis of typical answers is quite adequate for evaluation and scoring.[2]

A theoretical objection to the words in this list is that four out of the five are of Arabic origin, and only one is from the Sanscrit. The reply is that in Urdu

[1] Cf. Terman, op. cit., p 222 f. [2] Cf. Terman, op. cit., p. 282.

abstract terms of Arabic derivation are much more frequent than those from any other source, and are quite familiar to Hindus—much more so than are Sanscrit derivatives to Muhammadans.

SCORING. Five items. Each correct definition, (1). Maximum score, (5).

19. Adding Three Two-Anna and Three One-Anna Pieces (*S.R. X. AI 2; B. 33; B.S. VIII 4*).

PROCEDURE: (Pointing to a one-anna piece,) *Kyā tumheṇ ma'lūm hai ki is kī kyā qīmat hai?*

(And to a two-anna piece,) *Aur is kī kyā qīmat hai? Ab batāo ki in sab kī kyā qīmāt hai!*

ENG. VER.: Do you know what the value of *this* is? And *this*—what is its value? Now tell me, what is the value of *all* of them?

NOTE. The one-anna and two-anna coins are the natural materials for the original Binet test, Age VII, No. 4 (1911). The disadvantages which Terman himself recognises in the Stanford form of the test (i.e., using stamps instead of coins), obtain still more in India than in the U.S.A.

SCORING. Fifteen seconds are allowed. For correct answer, (1). Maximum score, (1).

20. Counting Backward from 20 to 1. (S.R. VIII 2; B. 38; B.S. VIII 2).

PROCEDURE: *Kyā tum ulṭā gin sakte ho? Bīs se ek tak ulṭā gino, bīs . . . unnīs . . .*

ENG. VER.: Tell me, can you count backward? From 20 to 1 count backward, 20 . . . 19 . . .

NOTE. The examiner's intonation of the last two words is sufficient to start the child on the downward path in this test.

SCORING. Time, 40 seconds. For correct response, or response containing only one error, (1); more than one error, (0). Maximum score, (1).

21. Making Change (S.R. IX 3; B. 40; B.S. IX 1).

PROCEDURE: (*a*) *Agar tum tīn āmne kī miṭhāi kharīdo, aur dukāndār ko aṭhannī do, to wāpis kyā loge?*

(*b*) *Agar nau āmne . . . Bara āmne . . .?*

(*c*) *Agar tin āmne . . . ek rupaya . . .?*

ENG. VER.: (*a*) If you buy three annas worth of sweets and give the shopkeeper an eight-anna piece, what will you get back?

(*b*) If you buy nine annas worth . . . give twelve annas . . . what . . .?

(*c*) If you buy three annas worth . . . give one rupee . . . what . . .?

NOTE. The test is given as in Terman.[1] Coins are not actually used as in Burt's test.[2] Note that each correct answer receives its separate credit.

SCORING. Three items. Each correct response, (1). Maximum score, (3).

22. N-V. Adaptation Board (P.P. XIV, p. 65).

PROCEDURE: *Ab achchhī tarah dekho. Yih ṭukṛā jo hai, is chhed meṇ nahīṇ jātā. Aur is meṇ nahīṇ jātā. Is meṇ bhī nahīṇ jātā. Is meṇ jātā*

[1] Cf. Terman, op. cit., p. 240.

[2] Cf Burt, op. cit., p. 49.

*hai! Ab dekho: (1) Ab kis meṇ jāegā? (Rakho.) (2) Ab kis meṇ? (3) Ab kis meṇ? (4) Ab kis meṇ jāegā? (5) Ab kis meṇ?*

ENG. VER.: Now watch carefully. This piece (which I have) will not go into *this* hole. And it will not go into *this* one; nor into *this* one. It goes into *this* one!

Now watch: (1) Now which one will it go into? (Put it in.) (2) Now into which one? (3) Now into which one? (4) Now into which one? (5) Now into which one?

NOTES. This board measures 11 by 8½ inches, and is half an inch thick. There are four round holes in it, three of them being 2½ inches in diameter, and the fourth being $2\frac{7}{16}$ inches. These are placed in the four corners, one inch from the edges of the board. A smooth round block, seven-eighths of an inch in thickness, which exactly fits the largest hole, but will not enter the other three, is used with the board.

The *method* of giving this test is exactly quoted from Pintner and Paterson.[1] "The examiner takes the board in his left hand, and with the right hand holding the block, shows the child that it will fit into the largest hole but not into any of the other holes. The board is so held that the large hole is at the examiner's upper right-hand corner. The child is then given the block and the examiner says, 'Put it into the right hole.' If the child fails he is shown how to do it. When this has been done the examiner says, 'Watch closely.' The board is now turned over in such a way that the large hole at the upper right-hand corner

[1] Cf. P.P. op. cit., p. 66.

approaches the child in turning and rests at the examiner's upper left-hand corner. As before, the child is told to put the block in the right place. Again if the child fails he is shown where the right hole now is. The examiner then turns the board over toward the child so that the large hole occupies the position at the examiner's lower left-hand corner. The child reacts as before. The next move is to turn the board so that the large hole occupies the lower right-hand corner. For the last move the examiner holds the board at the top right-hand corner with the right hand, and the bottom left-hand corner with the left, and turns the board toward the child diagonally so that the large hole rests finally at the upper left-hand corner.

"Each move of the board takes about half a second. It is a steady movement and not a hurried procedure."

The number of placements correctly made is recorded. The examiner must exercise constant care that every move of the board is made in full and easy view of the child.

SCORING. Five moves. Each correct placement, (1). Maximum score, (5).

**23.** N-V. Divided Oblong Card (S.R. V 5; B. 26).

PROCEDURE: *In ṭukṛoṇ ko joṛ do, tāki in kī shakl bilkul is ṭaraḥ dikhāī de.*

ENG. VER.: Join these pieces together in such a way that their shape will appear just like *this*.

NOTE. Directions as given by Terman.[1] The position of the cards as shown by Burt[2] often seems to lead to accidental success.

[1] Cf. Terman, op. cit., p. 169.

[2] Cf. Burt, op. cit., p. 41.

SCORING. For correct placing, (1). Maximum score, (1).

24. Naming Colours (S.R. V 2; B. 17; B.S. VII 3).

PROCEDURE: *Yih rang kyā hai? (Is kā nām kyā hai?) Yih kyā hai? Yih kyā hai? Yih kyā hai?*

ENG. VER.: What colour is this?. (What is its name?) What is this? What is this? What is this?

NOTES. For description of the colour card cf. list of materials, § 12. The colours are to be shown in the order—red, yellow, blue, green.

In Urdu the phrase "What colour is this?" does not seem to provoke the irrelevant replies feared by Terman.[1]

Latitude is given in the matter of the actual terms used to denote the colours. Thus:

Red—*lāl, surakh, rattā.*

Yellow—*pīlā, zard, basantī, "khaṭṭā," . . .*

Blue—*nīlā, līlā, āsmānī rāng, . . .*

Green—*harā, sabz, . . .*

Village children especially seem weak on the more technical terms, but respond well with descriptive terms, which are undoubtedly equivalent for the purpose of the test.

SCORING. Four colours. Each correctly named, (1). Maximum score, (4).

25 Giving Differences Between Concrete Objects (S.R. VII 5; B. 34).

PROCEDURE: (*a*) *Lakṛī meṇ aur shīshe meṇ kyā farq hai?*

[1] Cf. Terman, op. cit., p. 164.

(*b*) *Aṇḍe meṇ aur patthar meṇ kyā farq hai?*

(*c*) *Paṇī meṇ aur dūdh meṇ kyā farq hai?*

ENG. VER.: (*a*) Between wood and glass what is the difference?

(*b*) Between an egg and a stone what is the difference?

(*c*) Between water and milk what is the difference?

NOTES. The three pairs of concrete objects we have used are, of all that have been suggested, the simplest for the Panjab. Of the objects used in the West in the similar test, *fly* and *butterfly* introduce an unfamiliar word, especially to city children. *Cardboard* at least, if not paper, is unfamiliar to a village child, and even for the city child the English word would have to be used.

Our phrases and the objects to be distinguished are so common that there is no necessity for the extra inducements to reply, permitted by Terman.

SCORING. Three items. Each correct response, (1). Maximum score, (3).

26. Giving Similarities Between Two Objects (S.R. VIII 4; B.S. VIII 1).

PROCEDURE: (*a*) *Loha aur chandi ek bāt meṇ āpas meṇ milte haiṇ. Wuh āpas meṇ kis bāt meṇ milte haiṇ?*

(If the child does not respond add) *Lohā aur chāndī kis bāt meṇ ek jāise hote haiṇ?*

(*b*) *Ber aur āmm?* (*c*) *Bail-gāṛi aur ṭāngā?* (*d*) *Lakṛī aur koelā?*

ENG. VER.: (*a*) Iron and silver in one thing are like each other. In what thing are they like each other?

(If necessary add,) Iron and silver, in what thing are they one and the same?

(*b*) Plum and mango? (*c*) Ox-cart and pony-cart? (*d*) Wood and coal?

NOTES. The easiest is placed first. A more familiar pair of fruits than *apple* and *peach* (Stanford) are chosen with a view to meeting the Panjab village child's experience. *Ship* and *motor-car* are omitted for obvious reasons, and two common but different conveyances substituted. Wood and coal come last, because of an unexpected difficulty due to the fact that *koelā* is the word for charcoal as well as coal. Charcoal is possibly better known than coal, and its method of production is also familiar. Many children reply to question (*d*), "Coal is made from wood."

The first phrase brings the child's attention at once to something concrete which has to be dealt with. This test and the Rhymes test (No. 30) are good examples of the avoidance of an introductory explanation of what "I *am going* to say," or what "I *am going* to ask you to do."

Terman's examples of satisfactory and unsatisfactory answers are sufficient.[1]

*SCORING. Four items. Each correct response, (1).* Maximum score, (4).

27. Giving Similarities Between Three Things (S.R. XII 8).

PROCEDURE: *Ab batāo ki yih tīn chīzeṇ āpas meṇ kāise milti haiṇ? (a) Sāṇp, gāe, chiṛiyā. Yih*

[1] Cf. Terman, op. cit., p. 219.

*tīnoṇ āpas meṇ kāise milti haiṇ? (b) Kitāb, ustād, akẖbār. (c) U'nn, rūi, chamṛā. (d) Chāqū, ṭāisā, kīl. (e) Phūl, ālū, darakẖt.*

ENG. VER.: Now explain how these *three* things are like each other. (*a*) Snake, cow, bird (sparrow). (*b*) Book, teacher, newspaper. (*c*) Wool, cotton, leather. (*d*) Knife, pice (copper coin), nail. (*e*) Flower, potato, tree.

NOTES. In the Stanford test ambiguity was found in two cases. In (*d*) *tār* is the word for telegram as well as for wire. The word *kīl* (nail) has been substituted to avoid this difficulty.

In (*e*) *gulāb* (rose, or rose-bush) seems to have suggested a too great similarity with *tree*, thus throwing *ālū* (potato) into a separate category and spoiling an otherwise satisfactory response. We have therefore substituted *phūl* (flower).

SCORING. Five items. Each correct response, (1). Maximum score, (5).

28. Sentence Building with Three Words; Two or Three Sentences (S.R. IX 5; B. 47, 53, B.S. X 5, XII 2).

PROCEDURE: *Yih to tumheṇ mā'lūm hī hogā ki fiqrā kyā hotā hai. Ab maiṇ tumheṇ tīn lafz detā hūṇ (aur) tum ek fiqrā banāo jis meṇ yih tīnoṇ lafz ājāeṇ. (a) Larkā, gend, daryā. Ek fiqrā banāo, jis meṇ yih tīnoṇ lafz ājāeṇ.* (If necessary add,) *Yih tīn lafz aur lafzoṇ ke sāth milāo aur is tarah ek fiqra banāo—larka, gend, darya.*

(*b*) *Kam, rupaya, admi.*

(*c*) *Rasta, bazar, bagh.*

ENG. VER.: You must know what a *sentence* is. Now I will give you three words, and you make a sentence in which these three words will be.

(*a*) *Boy, ball, river.* Make a sentence in which these three words will be. (If necessary add,) Join these three words with other words and in this way make a sentence.

(*b*) Work, money, man (men).

(*c*) Road, river, garden.

NOTES. We have had little success in introducing a definition of *fiqrā* as Terman does of the word *sentence*. Such an additional clause seems only to encumber the test with linguistic technicalities. The implicit definition contained in the additional clause, "Join these three words . . ." has proved sufficient.

*Desert, rivers, lakes* (Stanford) are not suitable for the Panjab. For these we have substituted *road, river, garden.* In (*b*) *ādmī* may be either singular or plural according to the context.

Terman's analysis of satisfactory responses may be used as a guide in determining success or failure in the harder test, i.e., three words in *one* sentence. Ability to make one sentence containing the given words includes and implies the ability to do the same in *two* sentences. This inferior reply is nevertheless worthy of credit. If the child gives two distinct ideas or sentences, as e.g., "The boy has a ball, and he goes to the river," or "The man has to work, and he needs money," he is to be credited with partial success. Wholly unsatisfactory replies, or replies containing three separate ideas or sentences, constitute failure.

All three items are given to each child.

SCORING. Three items. Each correct sentence containing 3 given words, (2); for inferior replies, i.e., if the 3 words are given in two sentences, (1). Maximum score, (6).

29. Ball and Field (S.R. VIII 1, XII 3).

PROCEDURE: *Yih ek khet hai. Yih is ke gird, diwār (bāṛ) hai. Yih darwāzā hai. Tumhārā geṇd is meṇ kho gāyā. Tumheṇ ma'lūm nahīṇ ki kis jagah paṛā hūā hai. Tumheṇ patā nahīṇ ki kis taraf se āyā aur kitne zor meṇ āyā. Tum ko sirf yih ma'lūm hai ki geṇd is khet meṇ kisī na kisī jagah paṛā hūā hai.*

*Is meṇ āise rāste kā nishān banāo, jidhar jidhar ko jākar geṇd ḍhūṇḍhoge.*

(If the child merely points,) *Nahīṇ pencil se rāstā banāo tākī maiṇ dekh lūṇ.*

(If he is satisfied with an incomplete path,) *Kyā geṇd zarūr mil gāyā? Agar nahīṇ milā to kis taraf jāoge, tāki geṇd zarūr mil jāe?*

ENG. VER.: This is a field. This, around it, is a wall. Here is a gate. Your ball has been lost in this (field). You don't know at what spot it is lying. You don't know which direction it came from or how hard it came. You only know this, that the ball in this field, in some place or other, is lying.

Make on this the mark of that path, which you will go on (so that) you will surely find it. (If he merely points,) No, make a path with the pencil, so that I can see it.

(If he is satisfied with an incomplete path,) What, are you sure you have found it? (If he indicates that there is any doubt,) If it is not found, which way will you go so that the ball will certainly be found?

NOTES. We have used, instead of a circle, a square figure drawn with one stroke, leaving a gap in the middle of one side. This seems to produce less confusion in the child's mind when the examiner points to one of the straight sides and calls it a *wall*. It has been necessary to specify the *wall* and the *gate*. The field then becomes what would probably be visualised a walled garden. *Fields* are not enclosed by fence walls, and ordinarily a boy would not "know" that a ball was in one field and not in the adjacent one.

This is one of the few tests in which we have det evidences of coaching. Teachers who are ambitio their own boys to do well must not be permitt observe the examination.

SCORING. The 30 samples of the Stanford sco card are graded, and the child's drawings are marked accordingly. Samples 1-5, (5); 6, 8, 10, (4); 7, 9, 12, 13, 18, (3); 11, 14, 15, 16, 17, 19, 20, (2); 21, 22, 23, (1); 24-30, (0). Maximum score, (5).

30. Giving Three Rhymes (S.R. IX 6; B. 54; B.S. XV 2).

PROCEDURE: *Nam, kam, dam, sham, kyā yih lafz ek jāisī āwāz dete hain, aur āpas men milte hain, yā nahīn?*

(*b*) *Ab āise lafz bolo jin kī awāz lafz "kab" se miltī ho. Kab . . .*

ENG. VER.: *Nām* (name), *kām* (work), *dām* (price), *shām* (evening)—these words give the very same sound and are like each other, aren't they?

(*a*) In this same way you say some such words as will be like the word *āg* (fire). As many words as you can say, say them. *Āg . . .*

(*b*) Ditto—word *kab* (when).

NOTES. This is our best example of a test which was about to be rejected being reclaimed by the elimination of a lumbering definition, and by fixing the subject's attention from the outset on the essence of the test itself. The word for rhyme is the Arabic term, *wazn*, and is a somewhat technical term. Rhyme as such is hardly as familiar to an Indian child as to a European. The jingles of primers and reading lessons are as often based upon similar radicals regardless of vowel quality, as upon rhyming syllables.

All the words given are enumerated, the meaningless words being indicated separately. Credit is given only for meaningful words in addition to the cue-word. The time allowed is not more than one minute.

SCORING. Two good rhymes for *either* word, (1); 2 good rhymes each for *both* words, (2); 3 or more for *one* and at least 2 for the *other*, (3). Maximum score, (3).

31. Detecting Absurdities (S.R. X 2; B. 49; B.S. X 3).

PROCEDURE: *Main ek fiqrā bolūngā jis men kuchh bewaqūfī hogī. Tum achchhī tarah se suno, aur batāo, ki is men bewaqūf kī kyā bāt hai.*

(If he is satisfied with an incomplete path,) What, are you sure you have found it? (If he indicates that there is any doubt,) If it is not found, which way will you go so that the ball will certainly be found?

NOTES. We have used, instead of a circle, a square figure drawn with one stroke, leaving a gap in the middle of one side. This seems to produce less confusion in the child's mind when the examiner points to one of the straight sides and calls it a *wall*. It has been necessary to specify the *wall* and the *gate*. The field

## ERRATUM

p. 49, last line: for *bewaqūf* read *bewaqūfī*

SCORING. — The 30 samples of the Stanford scoring-card are graded, and the child's drawings are marked accordingly. Samples 1-5, (5); 6, 8, 10, (4); 7, 9, 12, 13, 18, (3); 11, 14, 15, 16, 17, 19, 20, (2); 21, 22, 23, (1); 24-30, (0). Maximum score, (5).

30. Giving Three Rhymes (S.R. IX 6; B. 54; B.S. XV 2).

PROCEDURE: *Nam, kam, dam, sham, kyā yih lafz ek jāisī āwāz dete haiṇ, aur āpas meṇ milte haiṇ, yā nahīṇ?*

(a) *Isī tarāh āise lafz bolo jin kī āwāz lafz "āg" se miltī ho, aur āisī āwāz deṇ jāisī kī "āg." Ag . . .*

(*b*) *Ab āisc lafz bolo jin kī awāz lafz "kab" se milti ho. Kab . . .*

ENG. VER.: *Nām* (name), *kām* (work), *dām* (price), *shām* (evening)—these words give the very same sound and are like each other, aren't they?

(*a*) In this same way you say some such words as will be like the word *āg* (fire). As many words as you can say, say them. *Āg . . .*

(*b*) Ditto—word *kab* (when).

NOTES. This is our best example of a test which was about to be rejected being reclaimed by the elimination of a lumbering definition, and by fixing the subject's attention from the outset on the essence of the test itself. The word for rhyme is the Arabic term, *wazn*, and is a somewhat technical term. Rhyme as such is hardly as familiar to an Indian child as to a European. The jingles of primers and reading lessons are as often based upon similar radicals regardless of vowel quality, as upon rhyming syllables.

All the words given are enumerated, the meaningless words being indicated separately. Credit is given only for meaningful words in addition to the cue-word. The time allowed is not more than one minute.

SCORING. Two good rhymes for *either* word, (1); 2 good rhymes each for *both* words, (2); 3 or more for *one* and at least 2 for the *other*, (3). Maximum score, (3).

31. Detecting Absurdities (S.R. X 2; B. 49; B.S. X 3).

PROCEDURE: *Main ek fiqrā bolūngā jis men kuchh bewaqūfī hogī. Tum achchhī tarah se suno, aur batāo, ki is men bewaqūf kī kyā bāt hai.*

(*a*) *Jitne ziyādā ādmī ek hī ghoṛe par sawār hoṇ, ghoṛā utnā hī ziyādā dauṛtā hai.*

(*b*) *Kal polis ne ek laṛkī kī lāsh pāī, jis ke aṭhārā ṭukṛe hūe hūe the. Wuh kahte haiṇ ki us laṛkī ne apne āp ko khud mār liyā hai.*

(*c*) *Kal do rel gāṛiāṇ ek dusre se ṭakrā gāyīṇ, lekin koī bahut nuqsān nahīṇ hūā, sirf aṭhtālis ādmī mare haiṇ.*

(*d*) *Ek ādmī ghoṛe par sawār thā. Wuh gir paṛā, aur us ke sir meṇ patthar lagā, aur wuh jhaṭ paṭ mar gāyā. Log use hāspatāl meṇ le gāye, aur kahte haiṇ ki us ke bachchne kī ummed nahīṇ hai.*

ENG. VER.: I am going to say a sentence in which there will be some stupidity. You listen carefully and tell me what foolish thing there is in it.

(*a*) The more men there are seated on one same horse, the horse runs just so much the faster.

(*b*) Yesterday the police found the corpse of a girl, of which there were eighteen (separate) pieces. They say that the girl (herself) killed herself.

(*c*) Yesterday two railway trains ran into (collided with) each other. But there was no great damage. Only 48 men were killed.

(*d*) A man was riding on a horse. He fell off, his head struck on a stone, and he died in an instant. They (the people) picked him up and took him to the hospital. It is thought that he will not get well.

NOTES. The first of the Stanford absurdities and Nos. 2 and 5 of Burt's scale are omitted. Children of

the central Panjab will hardly ever have seen a *hilly road*. The idiom in the question of the *three brothers* is uncertain, and the suicide question bids fair to arouse an emotional protest. The four sentences chosen have been modified to suit our subjects' experience. (*a*) becomes horse-back riders instead of cars on a train, and in (*d*) the bicycle-rider becomes a horseman. We have changed the railway accident into the more specific *collision*.

The analysis of replies given by Terman supplies analogies to almost all the answers of Panjabi children.[1] If the boy says that the overloaded horse is likely to get frightened and run away, he is given credit. An unexpected but frequent answer to (*b*) is that the police themselves must have been up to their usual tricks and killed the girl. This is only to be scored as correct if the child further elaborates his answer and makes it evident that he has thought it out.

SCORING. Four items. Each correct response, (1). Maximum score, (4).

32. Folded Paper Test (S.R. XIV 2, XVIII 2; B. 61; B.S. AI. 1).

PROCEDURE: (*a*) DRAWING FROM IMAGINATION. *Ab jo kuchh main karūn, achchhī tarah dekho.* (Fold once, twice; tear out a bit on double-fold side.) *Jab maiṇ is ko kholūṇgā to is meṇ kitne surākh (chhed) nikal āeṇge? Jis jis jagah chhed hogā, is kāgaz par nishān banāo.*

(*b*) FINDING THE RULE. *Achchhā, ab dekho.* (Fold once,) *Agar maiṇ is jagah kāṭūṇ, to kitne*

[1] Cf. Terman, op. cit., p. 256.

*surākh nikal āṇge?* (Fold twice,) *Is jagah, to kitne?* (Three times,) *Is jagah, to kitne?* (Four times,) *Is jagah, to kitne?* (Five times,) *Is jagah, to kitne?*

ENG. VER.: (*a*) Now whatever I do, you watch very carefully. (Fold once, twice; tear.) When I open this how many holes will come out? Wherever there will be a hole, make a mark on this paper.

(*b*) Very well. Now watch. (Fold once,) If I tear it in this place, how many holes will appear? (Twice,) In this place, how many? (Thrice,) In this place, how many? (Four times,) In this place, how many? (Five times,) In this place, how many?

NOTES. This test, as we have given it, is a combination of Binet's paper-cutting test described by Burt[1] and Terman,[2] and of Terman's "Induction Test."[3]

Three oblong sheets of paper, about six inches long by five inches wide, are used. The first part of our test consists in requiring the child to draw at approximately the correct points on one of the plain sheets, the two holes (not regarding shape) which will result from the first tearing. Whether his answer has been right or wrong, the unfolded sheet is shown to him and is then put out of sight.

In the second part of the test a fresh sheet is taken and, without actually tearing out the holes, the mid-points of the folded side of the paper are successively grasped between finger and thumb as if to be torn. In this

[1] Cf. Burt, op. cit., p. 64. [2] Cf Terman, op. cit., p. 338
[3] Cf. Terman, op cit., p. 310.

position the paper is held toward the child so that he can see the various edges and folds, and he is expected to give the answers, 1, 2, 4, 8, 16.

SCORING. (*a*) For *drawing holes* at approximately correct points, (1). (*b*) For *finding the rule*, one point each for the successive responses, 1, 2, 4, 8 and 16. Maximum score, (6).

**33.** N-V. Healy Form-board (S R. X AI. 3; P.P. VIII, p. 44).

PROCEDURE: *Yih ṭukṛe is meṇ bhar do. Is tarah bhar do ki koī jagah k̲hālī na rahe. Shurū' karo.* (If necessary,) *Zor ke sāth nahīṇ karnā chāhīye. Agar ṭhīk rakhoge to āpṭī ā jāeṇge.*

ENG. VER.: Put (fill) these pieces into *this*, so that there will be no empty space left. Begin. (If necessary,) Don't force them. They will go in of themselves if you place them rightly.

NOTE. In our scale the pieces are to be correctly placed in the frame in 120 seconds or less. It was thought that this time limit for the test might be unduly short, allowing too great credit for accidental successes, and too little for the plodding attack of a boy who might otherwise succeed only once in four minutes, but twice more in the fifth minute. To allow five minutes for the test, however, seemed impossible, in view of the length of the entire examination.

SCORING. For success within 40 seconds, (3); for success in 41 to 80 seconds, (2); for success in 81 to 120 seconds, (1); more than 120 seconds, (0). Maximum score, (3).

## 34. Problem of the Enclosed Boxes (S.R. XVI 4).

PROCEDURE:

*Mere pās ek sandūq hai.*

*Is ke andar* { *do* / *do* / *tīn* / *chār* } *chhoṭe chhoṭe sandūq haiṇ.*

*In* { *donoṇ* / *donoṇ* / *tinoṇ* / *chāroṇ* } *meṇ se har ek meṇ* { *ek ek* / *do do* / *tīn tīn* / *char char* }

*aur* { *chhoṭā* / *chhoṭe chhoṭe* / *chhoṭe chhoṭe* / *chhoṭe chhoṭe* } *sandūq haiṇ.*

*Kull kitne sandūq haiṇ?*

(If necessary add,) *Pahle, baṛā sandūq; phir do (tīn, chār) us se chhoṭe chhoṭe; aur un donoṇ (tīnoṇ, chāroṇ) meṇ ek ek (2 2, 3 3, 4 4) un se bhī chhoṭā (chhoṭe chhoṭe).*

ENG. VER.: I have a box. Inside it are two little boxes. In each one of these two is one wee wee box. Altogether how many boxes are there? (If necessary,) First the *big* box; then two smaller than it, inside; and in those two, one each, still smaller than they are. (And similarly for 2, 3, 4.)

NOTE. No actual boxes are shown. Otherwise the procedure is as in Terman.[1] The oral quality of the test as given is beautifully imitative of the diminishing sizes of the boxes.

[1] Cf. Terman, op. cit., p. 327.

SCORING. Four items. Each correct response, (1). Maximum score, (4).

35. Rajah and Deputy Commissioner (Collector) (S.R. XIV 3; B. 65; B.S. Ad. 3).

PROCEDURE: *Rājā meṇ aur Diptī Kamishṇar meṇ kyā farq hotā hai? Aur kyā farq? Aur kyā farq?*

ENG. VER.: What is the difference between a Rajah and a Deputy Commissioner (British Indian official, at the head of a Panjab district)?

What other difference? What other difference?

NOTES. This test seems to be as nearly analogous to the President-King test as any that could be devised.[1]

For other provinces than the Panjab, "Collector" may be used instead of Deputy Commissioner.

SCORING. Three differences. Each correct difference given, (1). Maximum score, (3).

## § (7) Seven Additional Tests

There are seven additional tests indicated on the scoring sheet. These all seem to be useful tests, but have not as yet been given sufficient trial to warrant their being included in the scale. It is hoped that data secured from the use of the tests will be available for further standardization, and for insertion later in a revised and extended scale. The procedure for these tests, both Urdu and Panjabi, is as follows.

A 1. Naming Knife, Pen and Key (S.R. III 2).

HINDUSTANI: *Yih kyā hai?* (*a*) *Kunjī* (*chābi*). (*b*) *Pāisā.* (*c*) *Chāqū.* (*d*) *Qalam.*

[1] Cf. Terman, op. cit., p. 313.

ENG. VER.: What is this? (*a*) Key. (*b*) Pice. (*c*) Knife. (*d*) Pen.

PANJABI: *Ih kī ai?* (*a*) *Chābī.* (*b*) *Pāisā.* (*c*) *Chāqū* (*d*) *Qalam.*

A 2. Repeating Seven Syllables (S.R. III 6).

HINDUSTANI: *Mere pīchchhe bolo:* (*a*) *Kutte ne billī pakṛī.* (*b*) *Billī ne chūhā mārā.* (*c*) *Garm hawā chaltī hai.*

ENG. VER.: Say after me: (*a*) (The) dog caught (the) cat. (*b*) (The) cat killed (a) rat. (*c*) (A) warm breeze is blowing.

PANJABI: *Mere pīchchhe bolo:* (*a*) *Kutte ne billī phaṛī.* (*b*) *Billī ne chūhā mārīyā.* (*c*) *Garm hawā chaldī ai.*

A 3. Longer Lines (S.R. IV 1).

HINDUSTANI: (*a*) *In donoṇ* (*lakīroṇ*) *meṇ se kaunsī lambī hai?* (*b*) *Ab kaunsī lambī hai?* (*c*) *Ab kaunsī lambī hai?*

ENG. VER.: (*a*) Of these two lines, which is the long one? (*b*) *Now* which is the long one? (*c*) *Now* which is the long one?

PANJABI: *Ehnāṇ doāṇ* (*lakīrāṇ*) *wichchoṇ kehṛī lammī ai?* (*b*) *Hun kehṛī lammī ai?* (*c*) *Hun kehṛī lammī ai?*

A 4. Triple Order (S.R. V 6).

HINDUSTANI: *Suno, ek kām mere liye karo. Pahle yih kunjī us kursī par rakho. Phir wuh dar-*

*wāzā kholo* (or *band karo*). *Aur phir wuh sandūq* (or *kitāb*) *mere pās le āo. Samajh gāye? Pahle kunji kursī par rakho; phir darwaza kholo; aur phir sanduq le āo. Shurū' karo.*

ENG. VER.: Listen, do something for me. First put this key on that chair. Then open (or shut) that door. And then bring that box (or book) to me. Do you understand? First put the *key* on the chair; then open the *door*; and then bring the *box*. Begin.

PANJABI: *Suṇ, sāḍe laī ik kam kar. Pahlāṇ ih kunjī os kursī utte rakh. Phir oh darwājā khol. Te phir oh sandūq* (or *kītāb*) *mere kol lai ā.*

A 5. Counting Thirteen Pice (S.R. VI 3).

HINDUSTANI: *Yih pāise dekho. In ko gino. Kitne haiṇ?* (If necessary add,) *Apnī uṇglī se is tarah gino. Ek . . .*

ENG. VER.: Look at these pice. Count them. How many are there? (Add,) Count them with your finger like this. One . . .

PANJABI: *Eh pāise wekh. Ehnāṇ nūṇ gin. Kinne ne?* (Add,) *Apnī uṇglī de nāl is tarāṇ gin. Ik . . .*

A 6. Clock Puzzle (S.R. XIV 6).

HINDUSTANI: *Kyā tum ghaṛī se waqt batā sakte ho? Farz karo ki chhe baj kar bāīs miniṭ hūe haiṇ, ghaṛī kī baṛī sūī kis jagah hogī, aur chhoṭī sūī kis jagah hogī? Achchhā. Ab farz karo ki*

*ghaṛī kī baṛī sūī chhoṭī sūī kī jagah par ā jāe, aur chhoṭī sūī baṛī sūī kī jagah par, to waqt kyā hogā?*

*Farz karo ki āṭh baj kar das miniṭ hūe haiṇ.* (If the hands change places,) *ghaṛī kī baṛī sūī kis jagah hogī, aur chhoṭī sūī kis jagah hogī?*

*Farz karo ki tīn bajne meṇ chaudah miniṭ (bāqī) haiṇ, ghaṛī kī baṛī sūī kis jagah hogī, aur chhoṭī sūī kis jagah hogī?*

ENG. VER.: Can you tell time by the clock? Suppose that twenty-two minutes after six o'clock have gone by. Where will the big "needle" of the clock be, and where will the little "needle" be? Good! Now suppose that the big hand should come in the little hand's place, and the little hand in the big hand's place, what time will it be?

Suppose that ten minutes after eight o'clock have gone by, (now with reversed positions,) where will the big hand of the clock be, and where will the little hand be?

Suppose that there remain fourteen minutes to three o'clock, (with reversed positions,) where will the big hand of the clock be, and where will the little hand be?

PANJABI: *Tūṇ ghaṛī thoṇ waqat das sakdāeṇ? Faraz kar ki chhe waj ke bāī miniṭ hoe ne. Ghaṛī dī waḍḍī sūī kis jagah hoegī, te chhoṭī sūī kis jagah hoegī? Changā! Huṇ faraz kar ki waḍḍī sūī chhoṭī sūī dī jagah te ā gaī ai, te chhoṭī sūī waḍḍī sūī dī jagah te ā gaī ai, tāṇ waqat kī hoega?*

*Faraz kar ki 8 waj ke 10 miniṭ hoe ne, gharī dī waḍḍī sūī kis jagah hoegī te chhoṭī sūī kis jagah hoegī?*

*Faraz kar ki 3 wajan wichch 14 miniṭ rahṇde ne, gharī dī waḍḍī sūī kis jagah hoegī, te chhoṭī sūī kis jagah hoegī?*

A7. Ingenuity Test (S.R. Sup. Ad. 6).

HINDUSTANI: (*a*) *Ek bartan meṇ tīn ser dūdh ālā hai, aur dūsre meṇ pānch ser ālā hai. In do bartanoṇ ko leke kis tarah sāt ser dūdh nāp kar lāoge?*

(*b*) (In similar phrase,) How would you measure out 8 sers in a 5-ser and a 7-ser vessel?

(*c*) (Similarly,) 7 sers in a 4-ser and a 9-ser vessel?

ENG. VER.: In one vessel 3 sers (quarts) of milk (will) go, and in a second, 5 sers will go. With these two vessels how will you measure out and bring back 7 sers of milk? Etc., etc.

PANJABI: *Ik bartan wichch tin ser dūdh paindā ai. Duje wichch panj ser paindā ai. Ehnāṇ do bartanāṇ de nāl satt ser dūdh kis tarāṇ lai āweṇgā? Etc., etc.*

## § (8) Panjabi Equivalents

The problem of vernacular tests in the Panjab is complicated by the existence of a household speech or dialect considerably different from the pure "Urdu" of the schools. The relation of the Panjabi dialect to the Hindustani (Urdu) can best be characterized for our

purpose here by making a comparison with the Negro dialect in the U.S.A., and its relation to ordinary English. If the Negro dialect were reduced to rule, given its own inflectional endings for all declensions and conjugations, permitted to employ without apology many homely terms and energy-saving elisions, various vowel and consonant substitutions being introduced, such as *d* for *th*, etc., we should have a dialect of English very closely analogous to the Panjabi dialect of Hindustani. The grammatical structure is identical and the vocabulary is very largely identical (almost wholly so as far as the language of our tests is concerned), the chief difference being one of inflection and pronunciation.

Children in school up to the age of nine or ten, and especially village children, are much more familiar with the homely speech. Their teachers use it in the class-room and only gradually is it replaced by the more elegant Urdu.[1]

In our scale the Panjabi form is made alternative. In justification of this procedure, the tests may be divided into three classes and considered separately.

1. In all tests which can be regarded as "performance tests" in the strict sense of the term, this procedure would hardly require defence. These tests are as follows:

| No. | No. |
|---|---|
| 1. Knox Cubes. | 12. Copying a Diamond. |
| 3. Goddard Form-board. | 22. Adaptation Board. |
| 10. Two Designs. | 23. Oblong Card. |
| 11. Copying a Square. | 33. Healy Form-board. |

[1] This account does not take cognizance of the movement among the Sikhs in the central Panjab to make Panjabi their "national" speech. In their own schools they employ Panjabi throughout, making use of the "Gurmukhi" script, and elevating the dialect to the status of a literary language by introducing a larger element of Sanscrit into their vocabulary.

2. In the following list of tests the language is *identical*, as may be seen by comparing the two versions phrase by phrase and word by word. There is no change other than that of particles, prepositions, pronouns, inflectional endings and the pronunciation of words.

| No. | | No. | |
|---|---|---|---|
| 4. | Digits Forward. | 23. | Oblong Card. |
| 5. | Digits Backward. | 24. | Colours. |
| 6. | Syllables. | 25. | Differences. |
| 8. | Questions (except *b* and *c*). | 27. | Three Similarities (3). |
| 16. | Coins. | 28. | Three Words in One or Two Sentences. |
| 17. | Concrete Definitions. | | |
| 18. | Abstract Definitions. | 30. | Rhymes. |
| 20. | Counting Backward. | 32. | Paper Test. |
| 22. | Adaptation Board. | 34. | Boxes. |

35. Raja and D.C.

3. In the remaining tests the equivalence may not be so obvious to a reader unfamiliar with the languages in question. Local vernacular terms which would not be understood by Urdu-speaking people outside of the Panjab, but which are used by Panjabis as exact synonyms, are introduced. In the following list all the synonymous terms thus used are enumerated.

| Test No. | Urdu Original | English Equivalent | Panjabi Word Introduced | No. of Synonyms | Name of Test |
|---|---|---|---|---|---|
| 2 | *mil* | find | *labh* | 3 | Weights |
| | *halkā* | light | *haulā* | | |
| | *bojh* | weight | *bhār* | | |
| 7 | *achchhī* | good | *changī* | 2 | Pictures |
| | *batāo* | explain | *das* | | |
| 8 | *sardī* | cold | *pālā* | 2 | Questions (*b*, *e*) |
| | *waqt* | time | *welā* | | |
| 9 | *jaldī* | fast | *chhetī* | 2 | Words in 2 Mins. |
| | *jānā* | go | *chalnā* | | |

| Test No. | Urdu Original | English Equivalent | Panjabi Word Introduced | No. of Synonyms | Name of test |
|---|---|---|---|---|---|
| 10 | *waqt* | time | *chir* | 2 | Two Designs |
| | *chhipā* | hide | *lukā* | | |
| 13 | *khūbsūrat* | beautiful | *sohnī* | 1 | Prettier Faces |
| 14 | *kam* | lacking | *ghat* | 1 | Missing Features |
| 15 | *dahnī* | right | *sajjī* | 2 | Fingers |
| | *bain* | left | *khabbī* | | |
| 19 | *ma'lūm* | knowledge | *patā* | 2 | Adding |
| | *qīmat* | price | *mull* | | |
| 21 | *dukāndār* | shopkeeper | *halwāī* | 1 | Change |
| 26 | *bāt* | thing | *gal* | 1 | Similarities |
| 29 | *kho* | lost | *gawāch* | 4 | Ball and Field |
| | *khet* | field | *pailī* | | |
| | *ma'lūm* | knowledge | *patā* | | |
| | *mil* | find | *labh* | | |
| 31 | *achchhā* | good | *changā* | 8 | Absurdities |
| | *batāo* | explain | *das* | | |
| | *sawār* | seated | *charan* | | |
| | *bhāg* | run | *bhajj* | | |
| | *larkī* | girl | *kurī* | | |
| | *takrā* | collide | *bher* | | |
| | *gir* | fall | *digg* | | |
| | *uṭhā* | lift | *chukk* | | |

In all only 27 different new words are introduced in the entire Panjabi scale.

Examples of the Alternative Urdu and Panjabi Forms

We may here show in parallel lines examples of the three classes of tests as above described.

1. NON-VERBAL. EXAMPLE, TEST 23. OBLONG CARD.

U[1]: *In do ṭukṛoṇ (ko) is tarah joṛ*
P[2]: *Inhāṇ doāṇ ṭukṛīyāṇ (nūṇ) tūṇ ("you") is tarāṇ joṛ*
U: *do ki in kī shakl bilkull is tarah dikhāī*
P: *de tāṇ jo inhāṇ dī shakal bilkull is tarāṇ wikhāī*
U: *de.*
P: *dewe.*

2. IDENTICAL. EXAMPLE, TEST 8. A, B, C, QUESTIONS.

U: *Jab tumheṇ nīnd āe, to tum ko kyā karnā*
P: *Jad tainūṇ niṇdar āwe, tāṇ tainūṇ kī karnā*
U: *chāhiye? Jab tum ko sardī lage, to*
P: *chāhīdā (ai)? Jad tainūṇ pālā lagge, tāṇ*
U: *tum ko kyā karnā chāhiye? Jab tum ko bhūk*
P: *tainūṇ kī karnā chāhīdā ai? Jad tainūṇ bhukh*
U: *lage. . . .*
P: *lagge. . . .*

3. WITH PANJABI SYNONYMS. EXAMPLE, TEST 7. PICTURES.

U: *Is taswīr ko gaur se dekho aur is kī*
P: *Es taswīr (mūrat) nūṇ chaṇgī tarāṇ wekh, te eh dī*
U: *bābat sab kuchh batāo.*
P: *bābat sab kuchh das.*

Examples may be multiplied by comparing the Urdu tests and their literal English translation with the Panjabi equivalents as given in the complete scale below.

## Summary of Reasons for the Bi-lingual Scale

1. The people of the Panjab are all bi-lingual.

[1] U. indicates Urdu. [2] P. indicates Panjabi.

Two vernaculars exist side by side, one remaining the household speech and the other only gradually replacing it.

2. These vernaculars are grammatically identical, and in vocabulary and usage shade into each other in infinite degree.

3. The Panjabi speech is the local dialect and possesses many varieties roughly coincident with the geographical and communal divisions of the province.

4. The Urdu is a general speech, the *lingua franca* of India, not confined to this province, but current in a large part of the peninsula, especially where there is a Muhammadan population, or has ever been Muhammadan rule. In the Panjab slightly more than half of the population is Muhammadan.

5. The tests could not be put into Panjabi in the first instance, as the variance between its local forms would lead to the discredit of any particular version, and to looseness in its use.

6. Insistence upon the Urdu form would be impossible in the case of all village children and of younger children even in cities.

7. Only three tests in the entire scale are vitiated by a repetition of the exact words of the formula. These three are Nos. 4, 5, and 6, Repeating Digits, and Repeating Syllables. In these three, also, the *instructions*, but not the portion for reproduction, may be repeated if necessary. This being the case, we feel that when a child does not reply at once to a question as couched in Urdu, it is legitimate to repeat the *same formula* in the standard phrasing in whichever of the two versions it has already been discovered that he is the more at home. This is to put on a common footing the child for whom the Urdu formula has been repeated,

the child for whom the Panjabi formula has been repeated, and the child for whom one formula has been elucidated by repetition in alternative form, it being remembered that all our children are bi-lingual, and that all our alternative tests are held to be *equivalent*.

It may be said that control tests should at once be devised to demonstrate this assumed equivalence. It seems to the writer that this will be feasible only when we have a highly satisfactory Performance scale with age-norms established, against which the scores of selected groups of our Hindustani and Panjabi subjects can be thrown for comparison. Until such time we shall have to accept them as equivalent.

Panjabi Equivalents. Procedure Alternative to the Urdu Tests

1. N-V. Knox Cubes: *Chaṇgī tarāṇ wekh, te jis tarāṇ maiṇ karāṇgā, tūṇ wī ose tarāṇ kar (karīṇ).*

2. N-V. Weights: (1) (*a*) *Enhāṇ doāṇ ḍabbīāṇ wichchoṇ bhārī kehṛī ai?* (*b*) *Enhāṇ doāṇ wichchoṇ?* (*c*) *Enhāṇ wichchoṇ?*

   (2) *Eh ḍabbīāṇ jihṛīāṇ haiṇ, ikko jihcāṇ wikhāī dendīāṇ haiṇ ke nahiṇ? Āho, par ikko jihīāṇ nahīṇ. Har ikk de bhār wichch faraq ai*

   *Huṇ sārīāṇ nāloṇ bhārī itthe rakh, te us thoṇ haulī itthe, te sārīāṇ nāloṇ haulī itthe. (Sārīāṇ nāloṇ bhārī itthe, te sārīāṇ nāloṇ haulī itthe.)*

3. N-V. Goddard Form-Board: *Inhāṇ ṭukṛīyāṇ nūṇ ihnāṇ dī apnī apnī jagah wichch bharnā ai. Wekhāṇ tūṇ kinnī jaldī nāl rakh sakdā haiṇ. (Is tarāṇ rakh, tāṇ jo har ikk apnī apnī ṭhīk jagah wichh ā jāe.)*

*Pher rakh, chheti chheti kar.*
*Pher rakh, chheti rakh.*

4. Repeating Digits Forward: *Jo kuchh maiṇ akhāṇ (bolāṇ) tūṇ mere pichchhe bol (ākh). Pahlāṇ chaṇgī tarāṇ suṇ, te pher mere pichche bol (ākh).*
(*Ikk do tinn chār panj chhe satt aṭṭh nau das.*)

5. Repeating Digits Backward: *Huṇ mere pichchhe bol, par ulṭā karke bol. Je maiṇ bolāṇ "tinn, satt"—tūṇ bol, "satt, tinn."* (If necessary), *Je maiṇ bolāṇ "6, 4," tūṇ kī boleṇgā? . . . "4, 6."*

6. Repeating Syllables: *Jo kuchh maiṇ bolāṇ tāṇ mere pichchhe bol. Chaṇgī tarāṇ suṇ.* (Sentences in *Urdu* without change.)

7. Description and Interpretation of Pictures: *Es tasvīr nūṇ chaṇgī tarāṇ vekh, te eh dī bābat sab kuchh das.*

8. Questions: (*a*) *Jad tainūṇ nind lagge, tāṇ tainūṇ kī karnā chāhīdā ai?*
(*b*) *Jad tainūṇ pālā lagge, tāṇ tainūṇ kī karnā chāhīdā ai?*
(*c*) *Jad tainūṇ bhukh lagge, tāṇ . . . ?*
(*d*) *Je tere koloṇ kise dī koī chīj ṭuṭ jāwe, tāṇ tainūṇ kī karnā chāhīdā ai?*
(*e*) *Je school jāṇ wele rāh wichch der lagan dā ḍar howe, tāṇ kī karnā chāhīdā ai?*
(*f*) *Je tere sāthī koloṇ tainūṇ satt lag jāe, tāṇ tainūṇ kī karnā chāhīdā ai?* (If necessary), *Terā sāthī tainūṇ māre, par jāṇ būjh ke na māre.*
(*g*) *Jad (je) tainūṇ koī us ādmī dī bābat kuchh puchchhe*

*jihnūṇ tūṇ changī tarāṇ nahīṇ jāndā, tāṇ tainūṇ kī kahnā chāhīdā ai?*

(*h*) *Jad tūṇ kise zarūrī kamm nūṇ shurū' karan laggeṇ tāṇ tainūṇ kī karnā chāhīdā ai?*

(*i*) *Kī sabab ai, ke sānūṇ kise bande dī pachhān uh dīāṇ gallāṇ thoṇ nahīṇ par oh dīāṇ kammāṇ thoṇ karnī chāhīdā ai?*

9. Words in Two Minutes: *Tūṇ do minit wichch kinne lafaz bol sakdā aiṇ. Jinne lafaz tainūṇ āunde hain chhetī chhetī boldā jā. Maiṇ ginnāṇgā. Jihṛe lafaz chāhundā aiṇ, bol, jis tarāṇ, "baddal, mej, sabaz, kutlā, khush." Bol.*

10. N-V. Drawing Two Designs: *Huṇ maiṇ tainūṇ do shakalāṇ wikhāwāṇgā. Bahut thoṛe chir lai wikhāwāṇgā, te pher (ohnāṇ nūṇ) chhipā (lukā) lawāṇgā. Tūṇ (changī tarāṇ) wekh lai, te pher is jagah khichch.*

*Huṇ wekh. Wekhdā raho. Dowāṇ nūṇ wekh. Huṇ is jagah khichch lai.*

11. N-V. Copying a Square: *Is shakal nūṇ wekh. Huṇ tūṇ aise tarāṇ dī ikk shakal banā. Is jagah khichch.*

12. N-V. Copying a Diamond: *Huṇ ehdī naql kar. Is jagah aise tarāṇ dī ikk shakal khichch.*

13. Choosing Prettier Faces: *Ehnāṇ doāṇ taswīrāṇ nūṇ wekh. Inhāṇ wichchoṇ kehṛī sohṇī (khūbsūrat) ai?*

14. Recognizing Missing Features: *Is taswīr wichch koī nuqs ai? Koī chīj ghaṭ ai? Mūṇh dā kihṛā hissā ghaṭ ai?*

15. Giving Number of Fingers: *Tere sajje hath dīāṇ*

*kinnīāṇ ungliāṇ hain? Khabbe hath diāṇ kinnīāṇ? Doāṇ lathāṇ diāṇ kinnīāṇ hain?*

16. Naming Six Coins: *Ih kī hai?* (*Rupayā, aṭhannī, chaunnī, dauannī, ānnā, paisā.*)

17. Concrete Definitions: *Sher kī chīj hai? Sipahī kī (chīj) hai? Ālū kī (chīj) hai? Hatṭī kī (chīj) hai?*

18. Abstract Definitions: *Rahm kī hai? Badlā kī ai? Khairāt kī ai? Hasad kī ai? Insāf kī ai?*

19. Adding Three One-Anna and Three Two-Anna Pieces: *Eh tāṇ tainūṇ patā ai, ihdī kī qīmat (mull) ai? Te ihdī kī qīmat ai? Hun das chnāṇ sārīāṇ dī kī qīmat ai?*

20. Counting Backward from 20 to 1: *Kī, tūṇ ulṭā gin sakdā (hain)? Wīh (āṇ) thoṇ laike ikk tikar ulṭā gin. Jis tarāṇ, "wīh . . . unnīh."*

21. Making Change: *Je tūṇ tinn ānne dī miṭhāī kharīdeṇ te halwāī nūṇ aṭhannī dewen (uh de koloṇ) wāpas kī lācugā? Je nau ānne . . . bārāṇ ānne . . . kī . . . ? Je tinn ānne . . . ikk rupayā . . . kī . . . ?*

22. N-V. Adaptation Board: *Hun changī tarāṇ wekh. Ih ṭukṛā jihṛā ai, is chhek wichch nahīṇ paindā. Te is wichch wī nahīṇ paindā. Is wichch wī nahīṇ paindā. Is wichch pai jandā ai. Hun wekh:— Hun kih de wichch jāwegā?* (*Rakh.*) *Hun kih de wichch? etc., etc.*

23. N-V. Divided Oblong Card: *Inhāṇ doāṇ ṭukṛīyāṇ (nūṇ) tūṇ* (you) *is tarāṇ joṛ de, tāṇ jo inhāṇ dī shakal bilkull is tarāṇ wikhāī dewe.*

24. Naming Colours: *Eh rang kī ai? (Ehdā nāṇ kī ai?) Eh kī ai?. Eh kī ai? Eh kī ai?*

25. Giving Differences Between Concrete Objects: *Lakṛi (lakkaṛ) wichch te shishe wichch kī faraq hondā ai? Patthar wichch te ande wichch kī faraq hondā ai? Dudhh wichch te pani wichch kī faraq hondā ai?*

26. Giving Similarities Between Two Objects: (*a*) *Lohā te chāndī ikk gal wichch ikk dūje nāl milde han. Oh ikk dūje nāl kehṛī gal wichch milde han? (Lohā te chāndī kehṛī gal wichch ikko jihe honde han?* (*b*) *Ber te amb.* (*c*) *Gaḍḍā te ṭāngā.* (*d*) *Lakkaṛ te kolā.*

27. Giving Similarities Between Three Things: *Hun̆ das ki ih tinn chīzāṇ āpo wichch ikk dūje nāl kis tarāṇ mildiāṇ ne—*

*Gāṇ chiṛī te sapp.*
*Kitāb ustād te akhbār.*
*Unn rūṇ te chamṛā (chamm).*
*Chāqū paisā te kil.*
*Phull ālū te darakht.*

28. Sentence Building with Three Words: *Tainūṇ patā howegā ki fiqrā kī hondā ai. Hun̆ maiṇ tainūṇ tinn lafaz deṇdā hāṇ. Tūṇ ikk fiqrā banā jehde wichch eh tinnoṇ lafaz ā jāṇ.*

(*a*) *Laṛkā, geṇd, daryā. Ikk fiqrā banā jehde wichch eh tinn lafaz hon.* (If necessary), *Eh tinn lafaz hor lafazāṇ de nāl milā, te is tarāṇ ikk fiqrā banā— laṛkā, geṇd, daryā.*

(*b*) *Kām, rupayā, ādmī.*

(*c*) *Rastā, bāzār, bāgh.*

29. Ball and Field: *Wekho ch ikk khet ai. Te ih, ih de chāroṇ pāse, wāṛ ai; ch ikk darwajā ai. Terā geṇd is wichch gawāch gayā hoegā. Tainūṇ patā nahiṇ ke kitthe piā ai, yā kidaron āyā, te kinne zor wichch āyā ai. Tainūṇ bas ainā patā ai ke geṇd is paili de andar ai.*

*Tūṇ os nūṇ labhnā ai. Jidhar jidhar jāke labheṇgā udhar rāh dā i jihā nishān banā pai tainūṇ geṇd zarūr labh pāe.*

*Nahiṇ, pinsal nāl rāh dā nishān banā, tāṇ jo maiṇ wekhāṇ.*

*Ki, geṇd jarūr labh piā ai? Je nahiṇ labhiyā, tāṇ kehṛī taraf jaweṇgā, tāṇ jo geṇd jarūr labh pāwe?*

30. Giving Three Rhymes: *Nām, kām, dām, shām—ch lafaz ikko jihī awāz deṇde neṇ, te āpo wichch milde neṇ ki nahiṇ?*

(*a*) *Ise tarāṇ oh lafaz bol jihnāṇ dī awāz lafaz "āg" nāl mile; ajahī awāz deṇ jis tarāṇ "āg" . . . Āg. . .*

(*b*) *Huṅ ajahe lafaz bol jihnāṇ di awāz lafaz "kab" nāl mile—kab. . . .*

31. Detecting Absurdities: *Maiṇ ikk gal karāṇgā jih de wichch kuchh bewaqūfī hai. Tūṇ chaṇgī tarāṇ suṅ, te das jihṛī is wichch bewaqūfī dī kī gal hai?*

(*a*) *Jinne ziyādā (bahutā) ādmī ikko ghoṛe utte chaṛan ghoṛā unnāi ziyādā (bahutā) dauṛdā (bhajdā) ai.*

(*b*) *Kal pulas ne ikk laṛki (kuṛī) dī lāsh labbhī jehde aṭhārāṇ ṭoṭe sāṇ (hoe hoe sī). Oh kahnde ne ke kuṛī ne apne āp nūṇ āpe mār liyā ai.*

(*c*) *Kal do rel gaḍḍiāṇ āpo wichch ṭakrā gaiāṇ (bhiṛ*

*ṭaiāṇ) ṭar koī bahutā niqsān nahiṇ hoiā. Sirf aṭhtālī ādmī mare neṇ.*

(*d*) *Ikk laṛkā ghoṛe te chaṛiā hoiā si; uh diggṛ piā; uh de sir wichch ṭatthar lagiā, te uh jkaṭ ṭaṭ mar gayā. Lok ohnūṇ chukk ke hāspatāl lai gaye, te kahnde han ki uh de bachan dī koī ziyādā ummed nahiṇ.*

32. Folded Paper Test: (*a*) *Huṇ jo kujh maiṇ karāṇgā chaṇgī tarāṇ wekh.* (Fold once, twice, tear out a bit on double-fold side.) *Jadoṇ maiṇ is nūṇ kholāṇgā tāṇ ikde wichch kinne chhek nikalange (wikhāī denge)? Jithe jithe chhek howegā, us jagah te nishān banā.*

(*b*) *Chaṇgā. Huṇ wekh.* (Fold once.) *Je maiṇ aithoṇ (is jagah thoṇ) ṭaṭ dewāṇ (kāṭāṇ), tāṇ kinne chhek nikalange (wikhāī denge)?*

33. N-V. Healy Form-board: *Ehnāṇ ṭukṛeāṇ nūṇ ik de wichch bhar de. Es tarāṇ bhar de ki koī jagah khāli na rahe.* (If necessary), *Zor lagāṇ dī loṛ nahiṇ. Je ṭhīk rakheṇgā tāṇ āpe i ā jānge.*

34. Problem of the Enclosed Boxes: *Mere kol ikk sandūq ai; uh de wichch do* (subsequently *do, tinn, chār*), *chhoṭe sandūq han. Ohnāṇ doāṇ (doāṇ, tinnāṇ, chārāṇ), wichchoṇ har ikk wichch ikk ikk (do do, tinn tinn, chār chār), chhoṭā chhoṭā (nikkā nikkā), sandūq ai. Kull (sāre) sandūq kinne hoe?*

35. Rajah and Deputy Commissioner (Collector): *Rājā te Diptī Kamishnar wichch kī faraq hondā ai? Hor kī faraq? Hor kī faraq?*

## § (9) Point Scale Norms and Mental Ages[1]

In the Table of Point Scale Norms and Mental Ages which follows (Table I), there are three series of figures:

(*a*) Serial numbers from 10 to 139, which are total scores out of a maximum of 170;

(*b*) Corresponding to these respective scores, figures indicating mental age in months; and

(*c*) Roman numerals indicating complete years of mental age, placed for convenient reference opposite the equivalent number of months, i.e. 48, 60, 72 months, etc.

In the calculation of "Hindustani Intelligence Quotients" or ratios, the method is simply to divide mental age in months by chronological age (i.e. actual age) in months. This quotient should be carried to two decimal places at least, or to three if desired. The use of a slide-rule greatly facilitates the computation if a large number of cases are to be scored.

To take an example: A boy of 6 years and 9 months of age makes a total point scale score of 55. His mental age is read from the table, second column, opposite the number 55, viz., 87 months. His actual age is 81 months. His Hindustani Intelligence Quotient is 87/81 or 1.073. This may be written 1.07, or, more simply, 107.

[1] The provisional norms published on the basis of the first 929 cases, and used in the original study of test results are reported in Part II, p. 114. The norms here given have been corrected by the inclusion of 459 cases subsequently examined and reported.

## TABLE I

### Point Scale Norms and Mental Ages (1,388 Cases)

| Points | M.A. | Points | M.A. | Points | M.A. |
|---|---|---|---|---|---|
| 10 | 53 | 54 | 87 | 93 | 132 XI |
| 11 | 54 | 55 | 87 | 99 | 133 |
| 12 | 55 | 56 | 88 | | |
| 13 | 55 | 57 | 89 | 100 | 135 |
| 14 | 56 | 58 | 90 | 101 | 136 |
| 15 | 56 | 59 | 91 | 102 | 138 |
| 16 | 57 | | | 103 | 139 |
| 17 | 58 | 60 | 92 | 104 | 141 |
| 18 | 59 | 61 | 93 | 105 | 142 |
| 19 | 59 | 62 | 94 | 106 | 144 XII |
| | | 63 | 95 | 107 | 146 |
| 20 | 60 V | 64 | 96 VIII | 108 | 147 |
| 21 | 61 | 65 | 97 | 109 | 149 |
| 22 | 61 | 66 | 98 | | |
| 23 | 62 | 67 | 99 | 110 | 150 |
| 24 | 62 | 68 | 100 | 111 | 152 |
| 25 | 63 | 69 | 100 | 112 | 153 |
| 26 | 64 | | | 113 | 155 |
| 27 | 65 | 70 | 101 | 114 | 157 XIII. 1 |
| 28 | 65 | 71 | 102 | 115 | 159 |
| 29 | 66 | 72 | 103 | 116 | 161 |
| | | 73 | 104 | 117 | 163 |
| 30 | 67 | 74 | 105 | 118 | 166 |
| 31 | 68 | 75 | 106 | 119 | 168 XIV |
| 32 | 69 | 76 | 107 | | |
| 33 | 70 | 77 | 108 IX | 120 | 170 |
| 34 | 70 | 78 | 108 | 121 | 172 |
| 35 | 71 | 79 | 109 | 122 | 174 |
| 36 | 71 | | | 123 | 176 |
| 37 | 72 VI | 80 | 110 | 124 | 178 |
| 38 | 73 | 81 | 111 | 125 | 180 XV |
| 39 | 74 | 82 | 112 | 126 | 183 |
| | | 83 | 113 | 127 | 185 |
| 40 | 75 | 84 | 114 | 128 | 188 |
| 41 | 76 | 85 | 115 | 129 | 191 |
| 42 | 76 | 86 | 116 | | |
| 43 | 77 | 87 | 117 | 130 | 193 XVI. 1 |
| 44 | 78 | 88 | 118 | 131 | 196 |
| 45 | 79 | 89 | 120 X | 132 | 198 |
| 46 | 80 | | | 133 | 202 |
| 47 | 81 | 90 | 121 | 134 | 206 XVII. 2 |
| 48 | 82 | 91 | 122 | 135 | 210 |
| 49 | 83 | 92 | 123 | 136 | 213 |
| | | 93 | 124 | 137 | 216 XVIII |
| 50 | 83 | 94 | 126 | 138 | 220 |
| 51 | 84 VII | 95 | 127 | 139 | 224 |
| 52 | 85 | 96 | 129 | | |
| 53 | 86 | 97 | 130 | | |

## § (10) Brief Scale Norms

The following Table of Brief Scale Norms is constructed in the same way as *Table I* above. Complete rules for the use of the Brief Scale are given below. It is to be noted that Brief Scale scores alone do not sufficiently differentiate mental ages above XIII.

TABLE II

BRIEF SCALE NORMS AND MENTAL AGES (1,388 CASES)

| POINTS | M.A. MOS. YRS. | POINTS | M.A. MOS. YRS. | POINTS | M.A. MOS. YRS. |
|---|---|---|---|---|---|
| 5 | 48 IV | 23 | 84 VII | 41 | 120 X |
| 6 | 50 | 24 | 86 | 42 | 122 |
| 7 | 52 | 25 | 88 | 43 | 124 |
| 8 | 54 | 26 | 90 | 44 | 126 |
| 9 | 56 | 27 | 92 | 45 | 130 |
| 10 | 58 | 28 | 94 | 46 | 134 XI. 2 |
| 11 | 60 V | 29 | 96 VIII | | |
| 12 | 62 | 30 | 98 | 47 | 138 |
| 13 | 64 | 31 | 100 | 48 | 142 |
| 14 | 66 | 32 | 102 | 49 | 146 XII. 2 |
| 15 | 68 | 33 | 104 | | |
| 16 | 70 | 34 | 106 | 50 | 150 |
| 17 | 72 VI | 35 | 108 IX | 51 | 156 XIII |
| 18 | 74 | 36 | 110 | 52 | 162 |
| 19 | 76 | 37 | 112 | 53 | 174 XIV. 6 |
| 20 | 78 | 38 | 114 | 54 | 186 XV. 6 |
| 21 | 80 | 39 | 116 | | |
| 22 | 82 | 40 | 118 | 55 | 198 XVI. 6 |

## § (11) Rules for the Use of the Brief Scale, and for the Omission of Later Tests

1. The Brief Scale may be used in special cases if time does not permit giving the complete examination, or if provisional scores are required for a particular purpose. The relationship found to exist between Brief Scale scores and point scores is set forth in Part II, § § 28, 29.

2. The ten tests of the Brief Scale comprise the

first part of every complete examination, and none of them may be omitted.

3. In continuing the examination, the following *six tests* may not be omitted under any circumstances:

(*a*) Test No. 14—Missing Features.
(*b*) „ 17—Concrete Definitions.
(*c*) „ 25—Concrete Differences.
(*d*) „ 26—Similarities between Two Things.
(*e*) „ 29—Ball and Field.
(*f*) „ 32—Paper Test.

4. The total number of points scored on the ten tests of the Brief Scale may be noted. If the Brief Scale score is less than *14*, the following *four tests* may be omitted, and may be assigned a score of *nil* "by implication":

(*a*) Test No. 28—Three Words in One or Two Sentences.
(*b*) „ 30—Rhymes.
(*c*) „ 33—Healy Form-board.
(*d*) „ 34—Boxes.

5. In case of the *eleven tests* enumerated below, points may be assigned "by implication" according to the following schedule:

| Brief Scale Score | No. and Name of Test | Points by Implication |
|---|---|---|
| 35 or more .. | (*a*) No. 11—Drawing a Square .. | .. 1 |
| 35 „ .. | (*b*) „ 15—Fingers .. .. .. | .. 3 |
| 45 „ .. | (*c*) „ 16—Naming Six Coins .. | .. 2 |
| 50 „ .. | (*d*) „ 13—Prettier Faces .. .. | .. 3 |
| 50 „ .. | (*e*) „ 19—Adding .. .. | .. 1 |
| 50 „ .. | (*f*) „ 21—Making Change .. .. | .. 3 |
| 50 „ .. | (*g*) „ 22—Adaptation Board .. | .. 5 |
| 50 „ .. | (*h*) „ 23—Oblong Card .. .. | .. 1 |
| 55 „ .. | (*i*) „ 12—Drawing a Diamond .. | .. 1 |
| 55 „ .. | (*j*) „ 20—Counting Backward .. | .. 1 |
| 55 „ . | (*k*) „ 24—Colours .. .. .. | .. 4 |

6. Four tests remain. These may be omitted only under circumstances noted:

(*a*) Test No. 18—Abstract Definitions. This test may be omitted, and scored *nil* "by implication," only when *no points* have been scored in Concrete Definitions.

(*b*) Test No. 27—Similarities between Three Things. In the same way, this test may be scored *nil* "by implication," if *no score* has been made in Two Similarities.

(*c*) Test No. 31—Absurdities. As above, if *no score* has been made in Comprehension.

(*d*) Test No. 35—Rajah and Deputy Commissioner. As above, if, and only if, *no score* has been made in Concrete Differences.

### §(12) A Non-Verbal Short Scale. Nine Tests

There are nine of the thirty-five tests of the point scale which may rightly be called non-verbal. These tests, while they require an oral explanation by the examiner, involve in response only drawing or manipulation by the child. The procedure is such that if the child is not unmistakably feeble-minded he will, without exception, understand the instructions. This scale may be employed in cases in which there is obvious linguistic difficulty. Where such difficulty is only suspected the Non-Verbal scores may be separately computed and used for comparative study. The claim cannot be made that N-V. scores are a measure of a specific aptitude rather than of general mental capacity.

THE NON-VERBAL TESTS ARE:

1. (1) Knox Cubes .. 10 Points
2. (2) Weights .. .. 4 „

| | | |
|---|---|---|
| 3. | (3) Goddard Form-board | 9 Points |
| 4. | (10) Two Designs .. | 6 ,, |
| 5. | (11) Copying a Square .. | 1 ,, |
| 6. | (12) Copying a Diamond .. | 1 ,, |
| 7. | (22) Adaptation Board .. | 5 ,, |
| 8. | (23) Oblong Card .. | 1 ,, |
| 9. | (33) Healy Form-board .. | 3 ,, |
| | Total | 40 Points |

Of these nine tests, four are also included in the Brief Scale.

The following Table of Age-Norms may be consulted:

TABLE III

MENTAL AGE EQUIVALENTS FOR THE NON-VERBAL SCALE

| POINTS | MENTAL AGE (MONTHS) | POINTS | MENTAL AGE (MONTHS) | POINTS | MENTAL AGE (MONTHS) |
|---|---|---|---|---|---|
| 1 | 54 | 11 | 78 | 21 | 116 |
| 2 | 56 | 12 | 81 | 22 | 120 |
| 3 | 58 | 13 | 84 | 23 | 126 |
| 4 | 60 | 14 | 87 | 24 | 132 |
| 5 | 62 | 15 | 90 | 25 | 140 |
| 6 | 64 | 16 | 94 | 26 | 150 |
| 7 | 66 | 17 | 98 | 27 | 162 |
| 8 | 69 | 18 | 102 | 28 | 174 |
| 9 | 72 | 19 | 106 | 29 | 186 |
| 10 | 75 | 20 | 110 | | |

The same facts are shown graphically in Fig. XXIV (*b*), Part II, p. 127.

## § (13) List of Materials required for the Hindustani Binet-Performance Tests

1. COINS. Silver rupee, silver 8-, 4-, and 2-anna pieces, 1-anna piece, 13 pice. (For Tests 16 and A5.)

2. WEIGHTS. Five boxes, 14 x 23 x 43 mm. ($\frac{1}{2}$ x $1\frac{1}{6}$ x $1\frac{3}{4}$ inches), weighing respectively 3, 6, 10, 15, and 21 grams ($\frac{1}{4}$, $\frac{1}{2}$, $\frac{5}{6}$, $1\frac{1}{4}$, and $1\frac{3}{4}$ tolas). Small pill boxes of uniform size and appearance, and weighted in the same proportions as the matchboxes above described, are quite suitable. (For Test 2.)

3. CARDS. One plain stiff card, 3 x 5 inches. One similar card cut diagonally into triangular halves. (For Test 23.)

4. PLAIN PAPERS. A supply of rectangular sheets of plain paper, size about 5 x 6 inches. (For Test 32.)

5. WATCH, SHOWING SECONDS. (For Tests 3, 9, 10, 33, A7, etc.)

6. KNIFE, PEN (QALAM), AND KEY. All should be of a type familiar to village children. A folding pen-knife, or a modern flat key should not be used. (For Tests A1, A4.)

7. SOFT LEAD PENCILS. One for scoring, and one for the child in the Drawing Tests. (For Tests 10, 29, 32, 11, 12.)

8. PICTURES. (*a*) Panjab Household Scene. (For Test 7.)
   (*b*) Village Well and Group of Men. (For Test 7.)
   (*c*) Ekka and Passengers. (For Test 7.)
   (*d*) Three Pairs of Faces—Hindustani types. (For Test 13.)
   (*e*) Four Figures with Missing Features. (For Test 14.)

These pictures, printed on separate cards, may also be had from the author.

9. CARDS WITH DESIGNS:[1]

(*a*) Square, $1\frac{1}{2}$ inch on a side. (For Test 11.)

(*b*) Diamond, $2\frac{3}{4}$ inches long, and $1\frac{1}{2}$ inches broad. (For Test 12.)

(*c*) Two parallel lines, 2 and $2\frac{3}{8}$ inches in length, respectively; 1 inch apart, with middle points opposite. (For Test A3.)

(*d*) Truncated Pyramid and Greek Key designs for memory drawing. (For Test 10.)

All the above to be drawn on plain white cards in heavy black lines (preferably with draughtsman's ink), one twenty-fourth of an inch in breadth.

10. CARD WITH COLOURS. Red, yellow, blue and green strips, each $2\frac{3}{8} \times \frac{3}{8}$ inches, glued to a card in this order from above downward. They are placed three-quarters of an inch apart. Correct spectral (rainbow) colours should be used. If not available elsewhere, we can supply the proper colours. (For Test 24.)

11. KNOX CUBES. (For Test 1; complete specifications are given in the text of the test, § 6.)

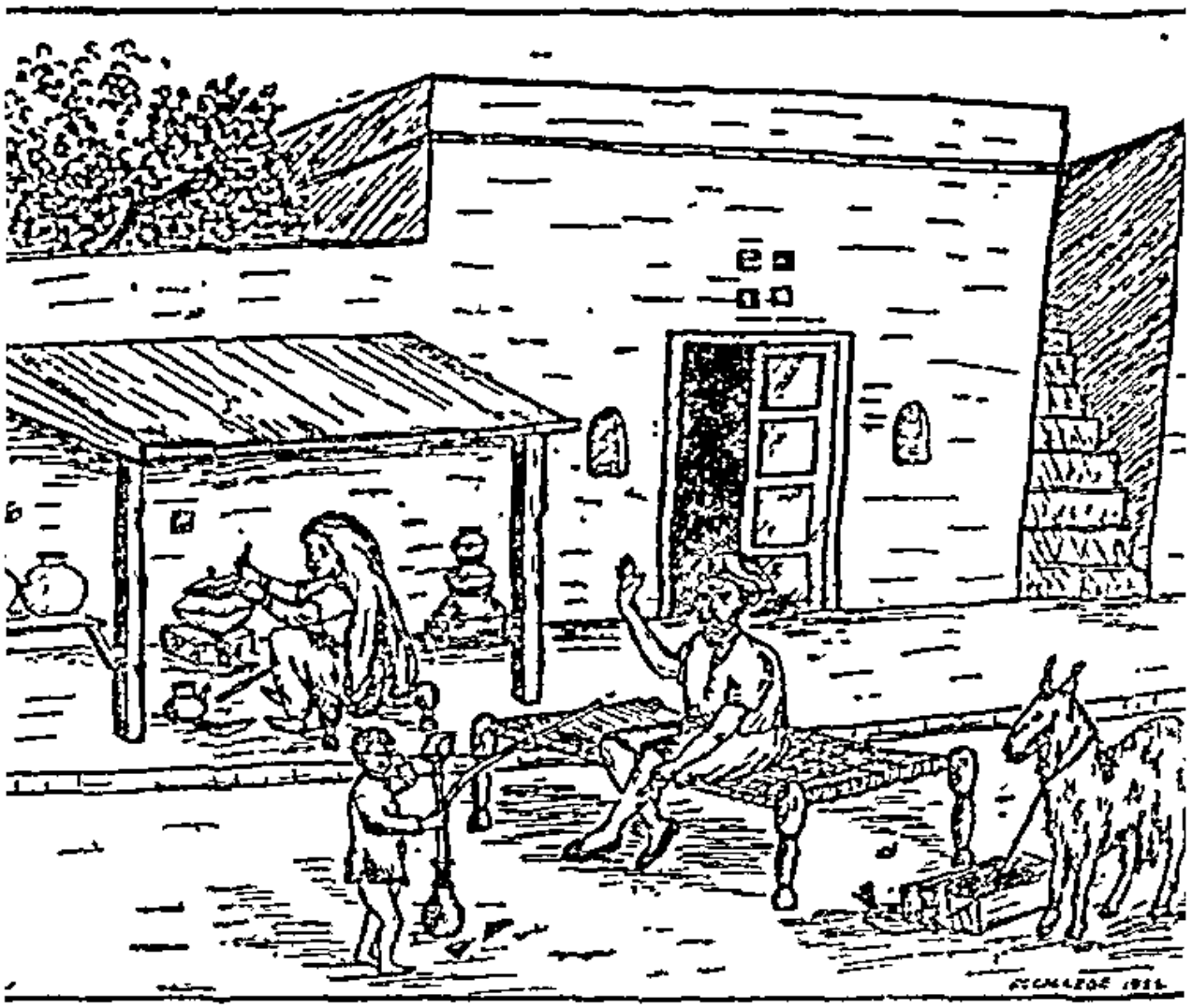
12. GODDARD FORM-BOARD. (For Test 3; specifications in text, § 6.)

13. ADAPTATION BOARD. (For Test 22; specifications in text, § 6.)

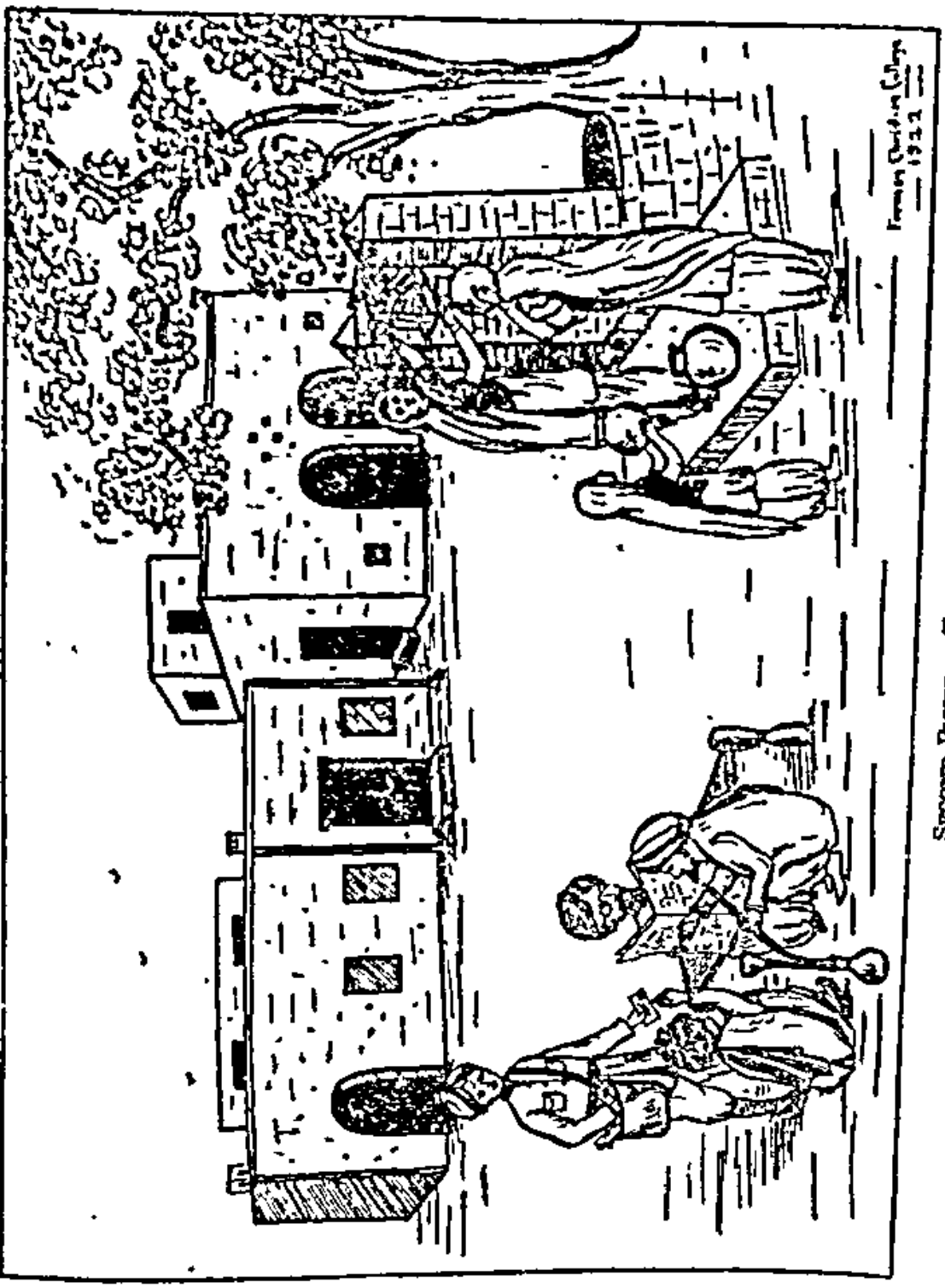
14. HEALY FORM-BOARD. (For Test 33; specifications in text, § 6.)

[1] These cards are as supplied in the "Test Materials" supplement to Terman's *Measurement of Intelligence*. Scoring Cards for Tests 10, 11, 12 and 29 are also included in this material.

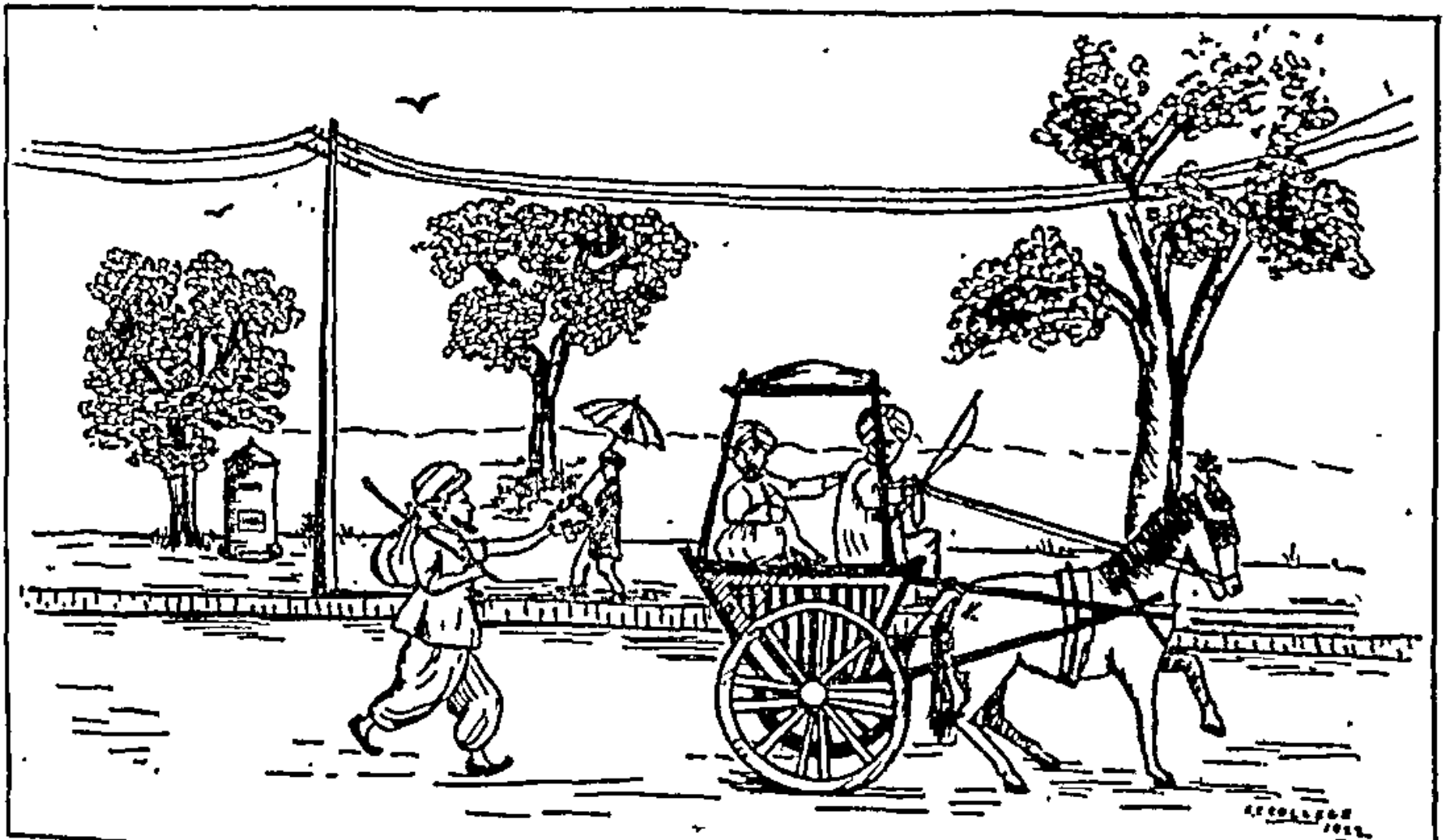
## § (14) Pictures for Use with the Hindustani Binet-Performance Point Scale



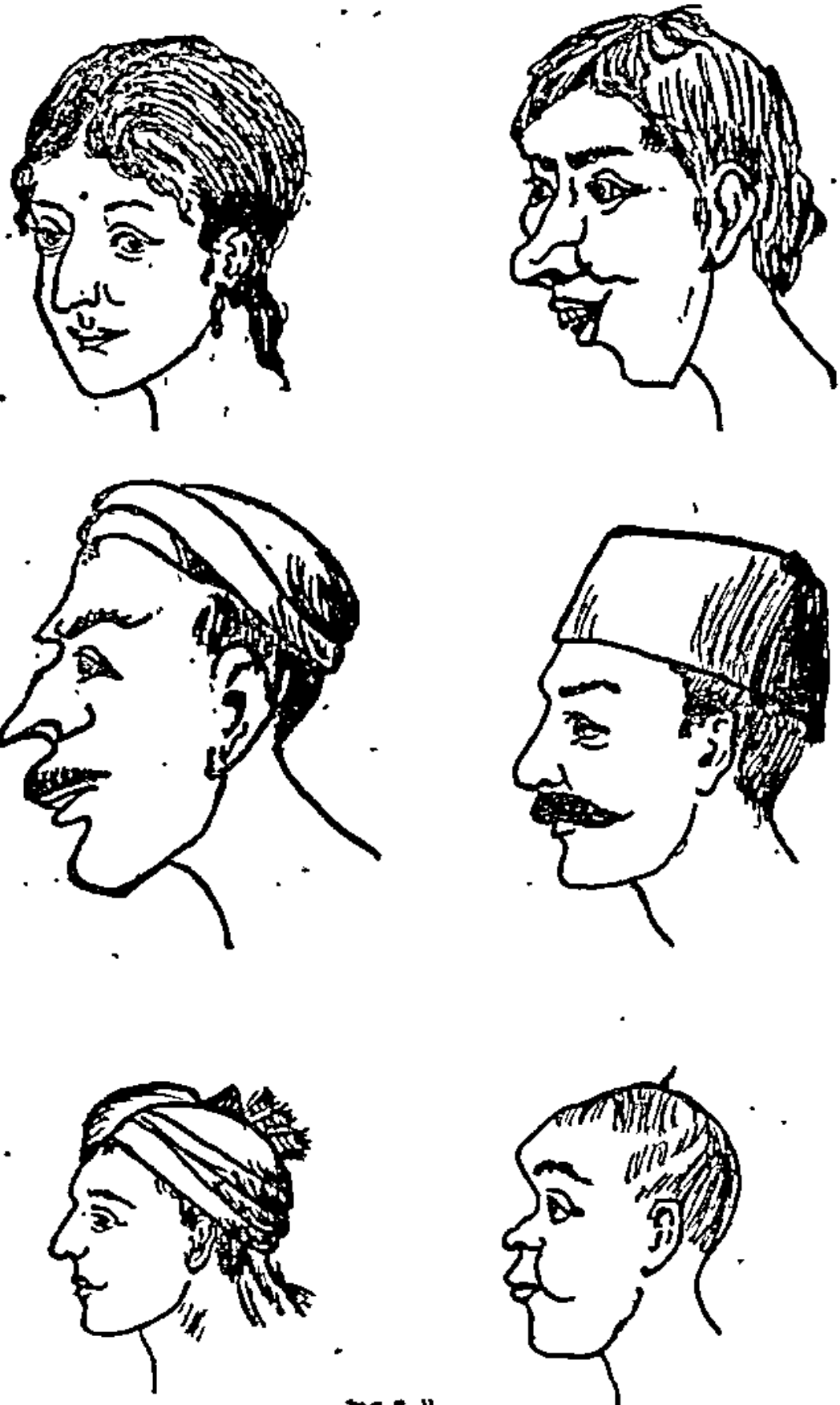
FIRST PICTURE, TEST NO. 7



SECOND PICTURE, TEST NO. 7

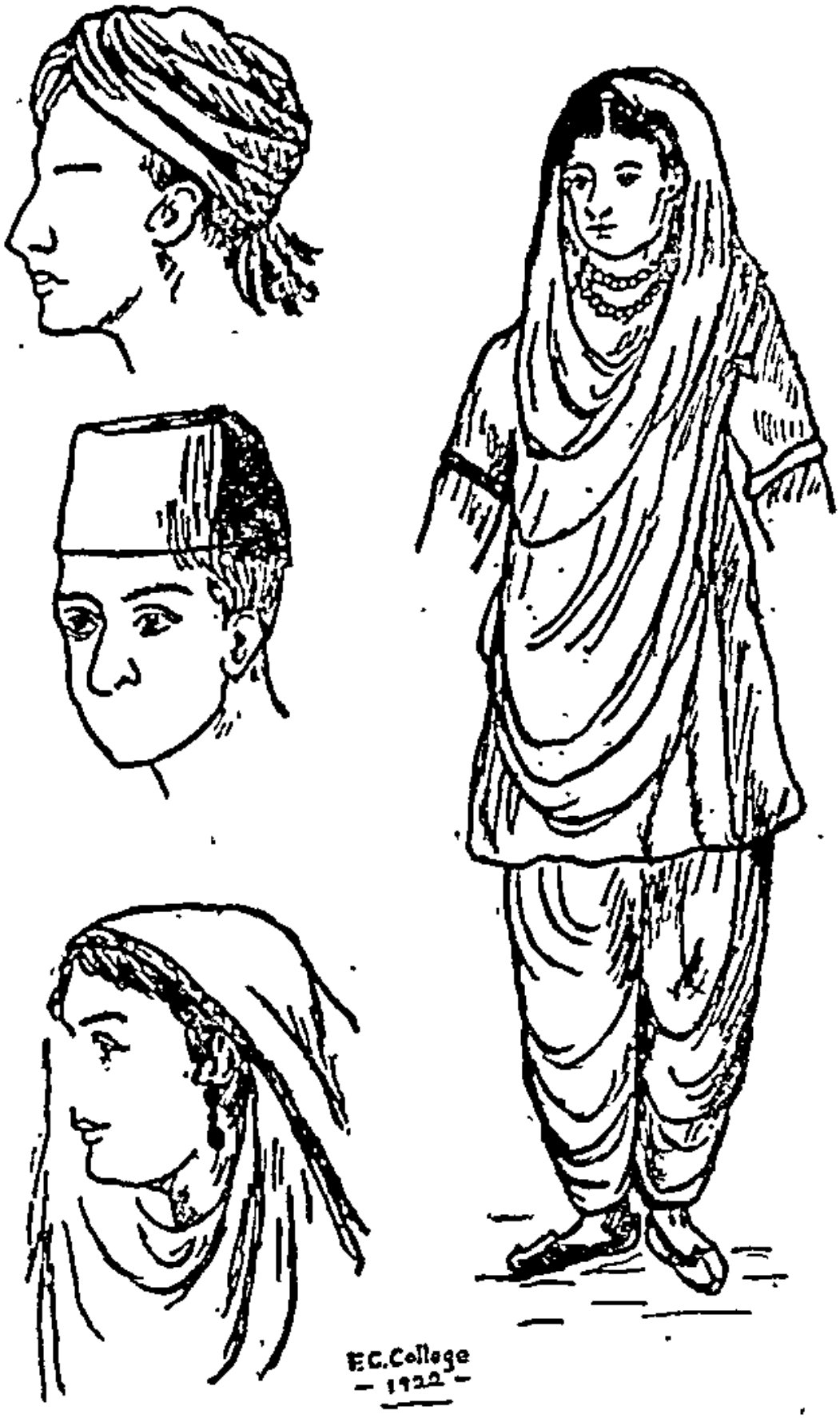


THIRD PICTURE, TEST NO. 7



FC. College
—1922—

FOURTH PICTURE, TEST NO. 13




FIFTH PICTURE. TEST NO. 14

# INDEX


Abstract Definitions, 37, 76, 68
Absurdities, Detection of, 49, 70, 76
Adaptation Board, 39, 68
Adding Values of Coins, 38, 68
Additional Cases, 72
Additional Tests, 8, 55
Administration of Tests, 15
Age, Computation of, 5
Age Norms, Brief Scale, 77
Alternative Urdu and Panjabi, 62
Army Alpha and Beta Tests, 1

Ball and Field, 47, 75
Beatty, J., ix
Bi-lingual Scale, 63
Binet-Simon Scale, 3, 16
Birth, Date of, 5
Books Required, 3
Boxes, Enclosed, 54, 75
Brief Scale, 6, 7, 15, 32
Brief Scale Norms, 74
Brigham, C. C., ix
Burt, C., Mental and Scholastic Tests, 3, 16

Card, Divided Oblong, 41, 68, 77
Cards, with Designs and Colours, 78 79
Change, Making, 39, 68
Clock Puzzle, 57
Coaching and Practice, 3
Coins, Naming, 35, 77
Colours, Naming, 42, 69
Confidential Nature of Tests, 2
Counting Coins, 57
Counting Backward, 38, 68
Cubes, Knox, 6, 16, 65, 76, 79

Definitions, Concrete, 36, 68, 75
Definitions, Abstract, 37, 68, 76
Deputy Commissioner, Rajah and, 55, 71, 76
Designs, Drawing, 7, 30, 67
Diamond, Copying a, 7, 32, 67
Differences, Concrete, 42, 69, 75
Digits, Repeating, 6, 22, 23, 66
Durga Das Chopra, ix

Elimination of Tests, 2
English Version of Tests, 15
Equivalence of Bi-lingual Tests, 15, 63 ff.
Estimate, Teacher's, of Intelligence, 6

Faces, Prettier, 7, 33, 67, 83
Features, Missing, 7, 34, 67, 75, 84
Field, Ball and, 47, 70, 75
Fingers, Giving Number of, 34, 67
Folded Paper Test, 51, 71, 75
Form-board, Goddard, 6, 20, 65, 77, 79
Form-board, Healy, 53, 71, 75, 77, 79

Goddard Form-board, 6, 20, 65, 77, 79
Group Test, Otis, 1
Gurmukhi, 60

Healy Form-board, 53 71, 75, 77, 79
Hindustani Intelligence Quotients, 72

Implication, Scoring by, 75
Induction Test, 52
Information, Supplementary, Required, 5
Ingenuity Test, 59
Instructions, General, 3
Intelligence Quotients, Hindustani, 72

Justin, Robert, ix

Knife, Pen and Key, 55
Knox Cubes, 6, 16, 65, 76, 79

Language of the Tests, 4
Lines, Longer, Test, 56

Materials Required, 3, 4, 77
Mental Ages, Brief Scale Norms and, 74
Mental Ages, and Non-verbal Scores, 77
Mental Ages, Point Scale Norms and, 72, 73
Missing Features, 7, 34, 67, 75, 84
Mohan Lal Bahl, ix
Mohd. Akbar Khan, ix

Naming Knife, Pen, Key, 55
Non-verbal Scale, 8, 16, 76
Norms, Brief Scale, 74
Norms, Non-verbal Scale, 77
Norms, Point Scale, 72, 73

Oblong Card, 41, 68, 77
Omission of Tests, Rules for, 74
Order of Tests, 6, 7

Order, Triple, 56
Otis Group Test, 1

Panjabi Equivalents, 59, 65
Panjabi Language, 4, 60
Paper Cutting Test, 52
Paper, Folded, Test, 51, 71, 75
Papers Required, 78
Pen, Knife and Key, 55
Performance Tests, 1
Pictures, Description and Interpretation of, 7, 26, 66
Pictures, Test, 7, 80
Pintner-Paterson Performance Scale, 1, 3, 4, 16, 20, 40
Points by Implication, 75
Point Scale, 8
Point Scale Norms and Mental Ages, 72
Porteus Maze Scale, 1
Prettier Faces, 7, 33, 67, 83
Princeton University, ix
Procedure, 15
Puzzle, Clock, 14, 57

Questions, 27, 66

Rajah and Deputy Commissioner, 55, 71, 76
Rhymes, 44, 48, 70, 75
Rice, Mrs. C. Herbert, ix
Roman Urdu, 15
Rules to be Observed, 4

School Standing, Records of, 6
Scoring by Implication, 15, 75
Scoring Cards, 4
Scoring Sheet, 8, 9
Seguin Form-board, 20
Sentence-building with Three Words, 45, 69
Similarities, Three, 44, 69, 76
Similarities, Two, 6, 43, 75
Sources, 3
Square, Copying a, 7, 32, 67
Stanford-Binet Scale, 1, 16
Sundar Das, ix
Sylvester, R. H., 20

Teachers' Estimates, 6
Terman, H. L., 25
Terman, The Measurement of Intelligence, 3
Terman, Test Material, 3
Tests: Eliminated, 2
Tests: Procedure and Directions, 15 ff.
Tests, the Text of the, 15 ff.
Type Used in this Book, 15

Urdu Language, 4, 60
Urdu, Roman, 15
Urdu Tests, Panjabi Alternative to, 62, 65
U.S. Army Alpha and Beta, 1

Velte, Mrs. F. Mowbray, ix

Warren, H. C., ix
Wazir Ali, M., ix
Weights, Arranging and Comparing, 6, 17, 29, 65
Weights, Specifications, 78
Words in Sentences, 45, 69, 75
Words in Two Minutes, 29, 67
Wyatt, H. G., ix

Yerkes, R. M., 30